

FIG. 1A1

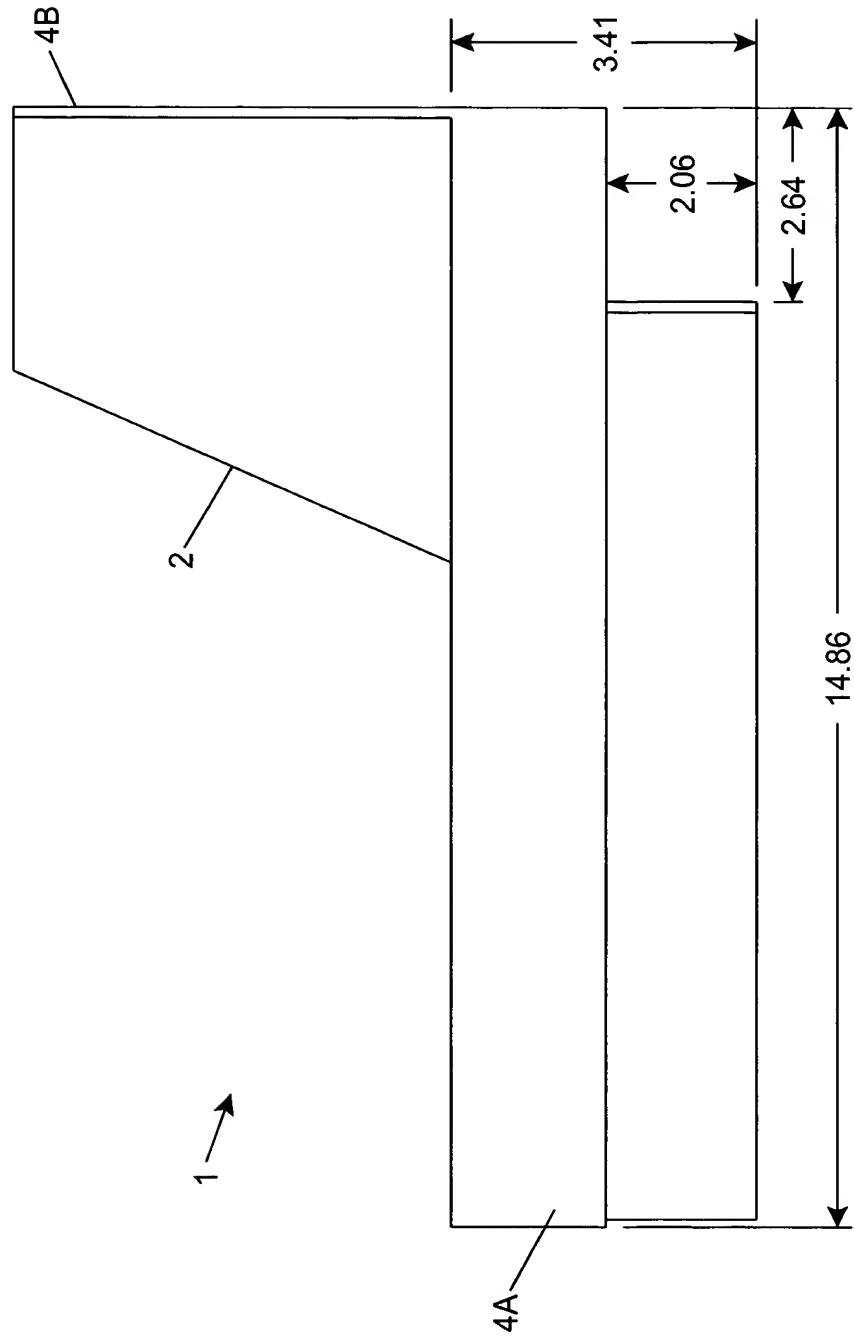


FIG. 1A2

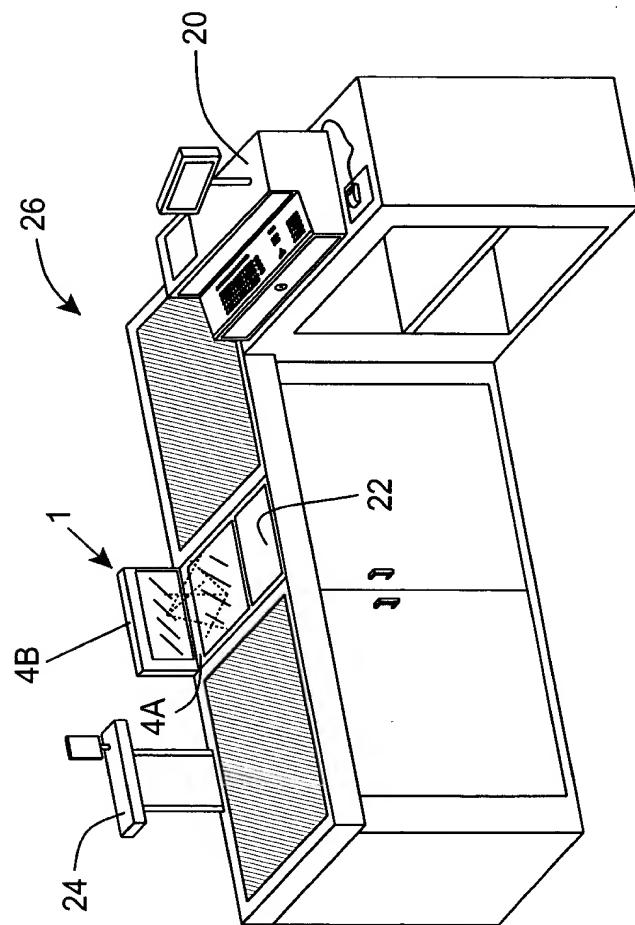
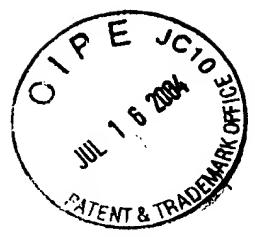


FIG. 1B

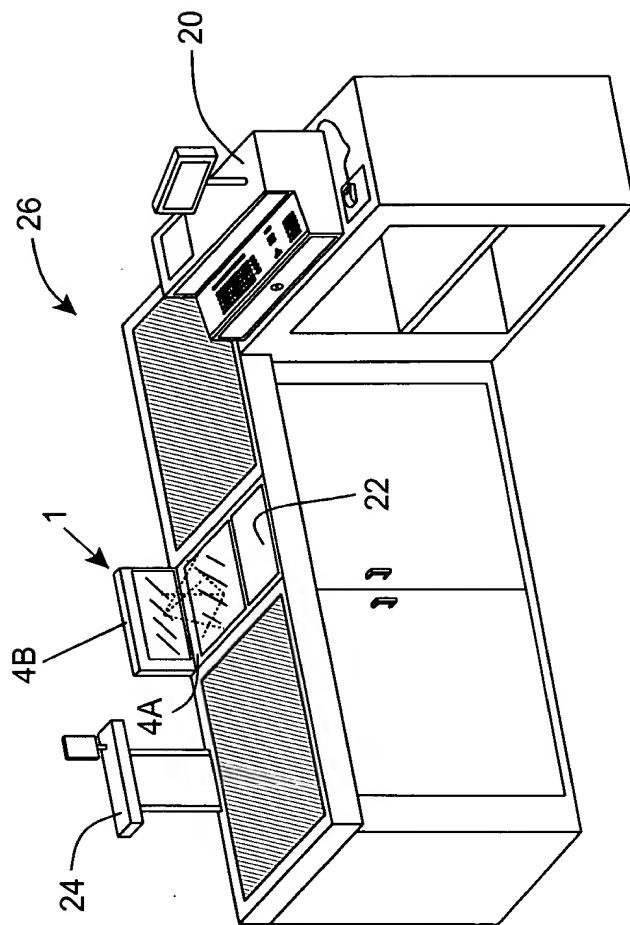
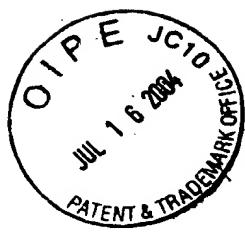


FIG. 1B1

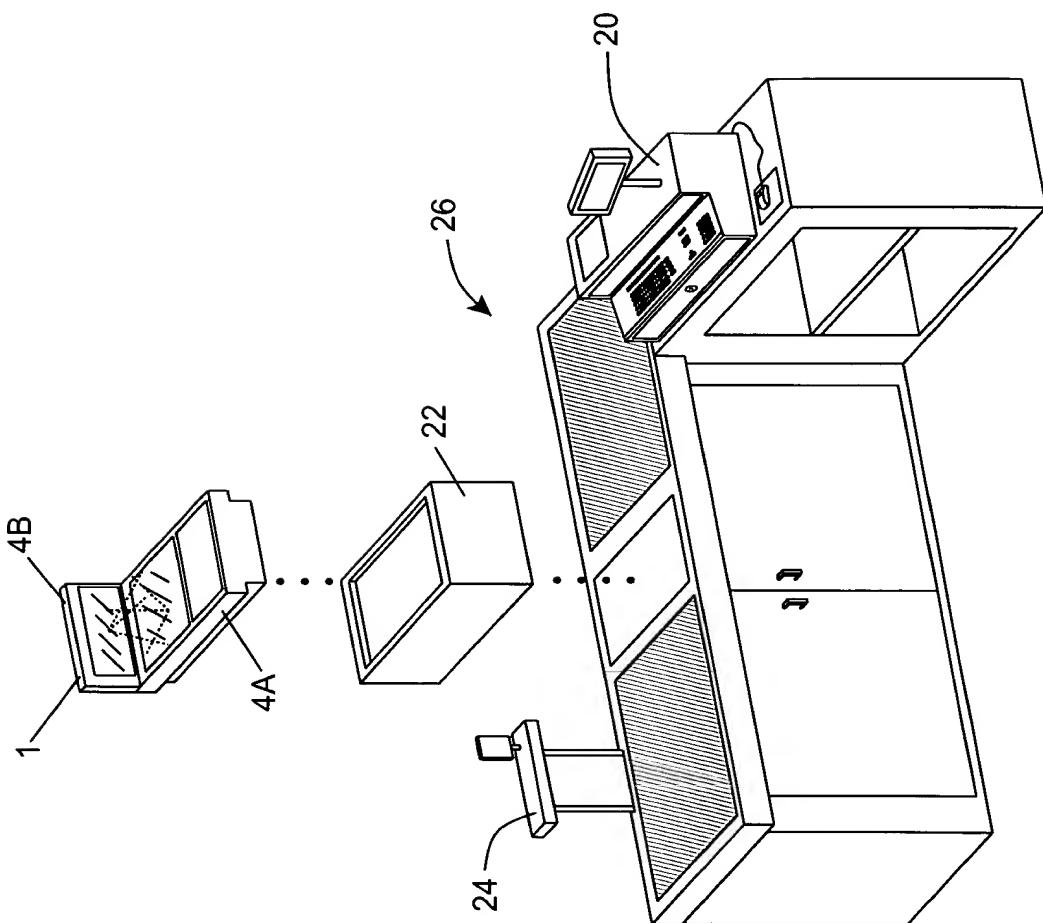
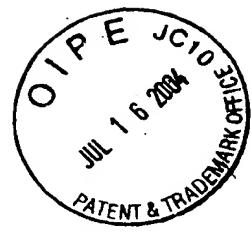


FIG. 1B2

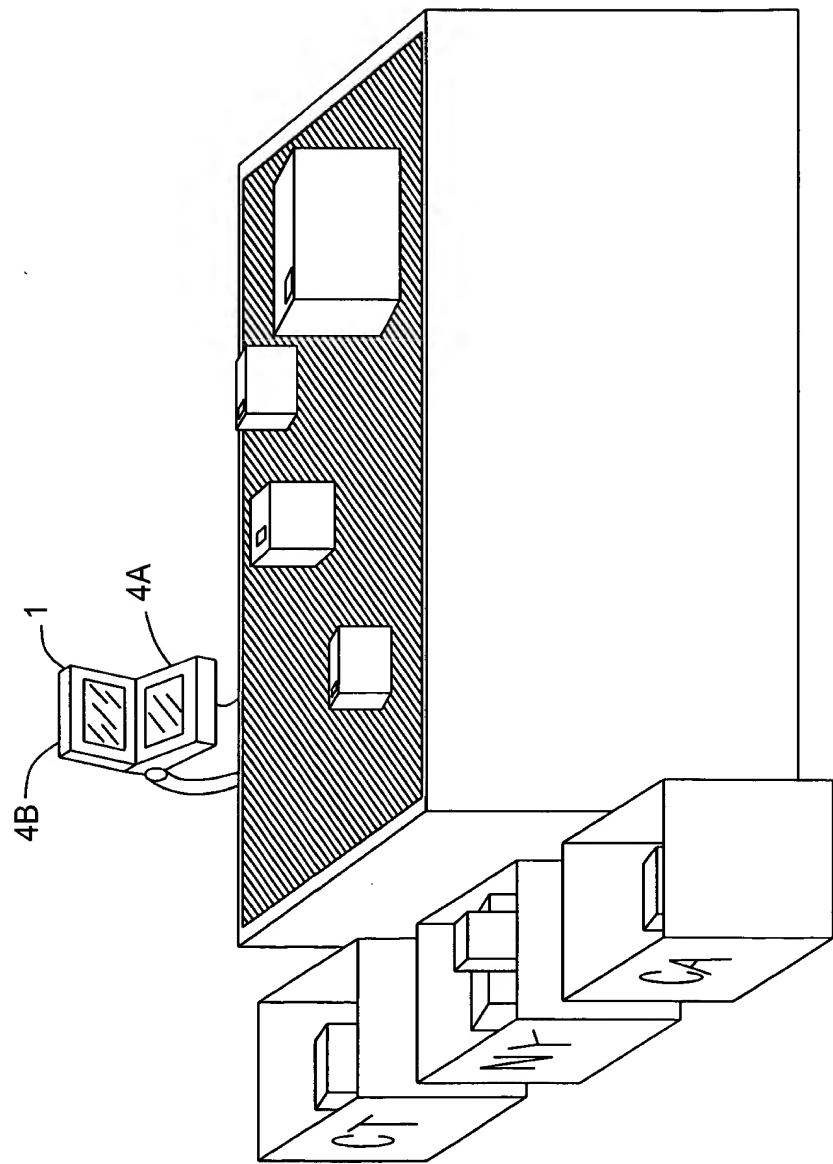
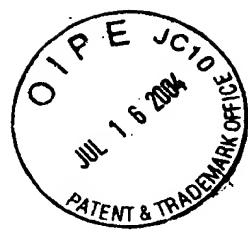


FIG. 1C

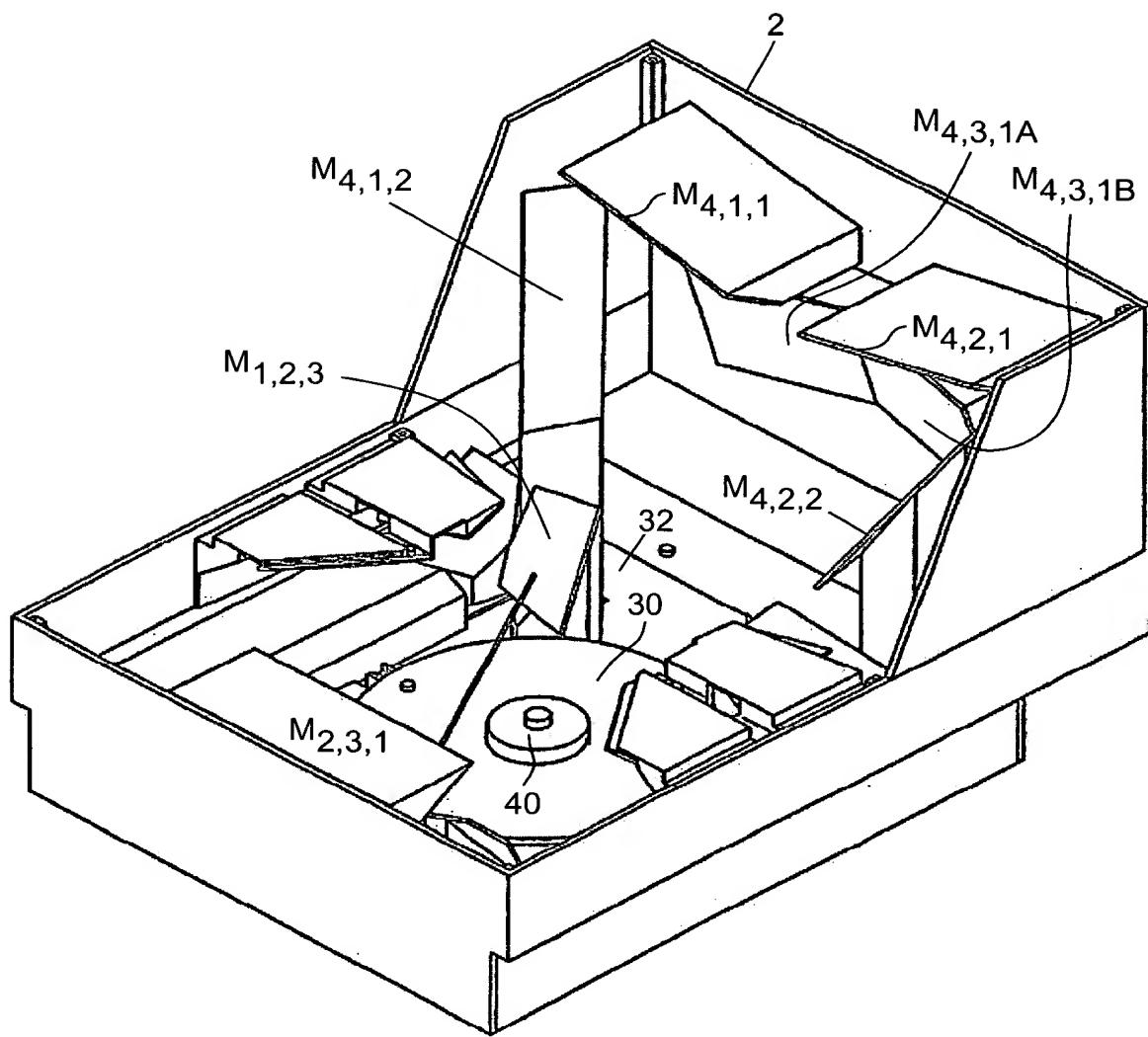
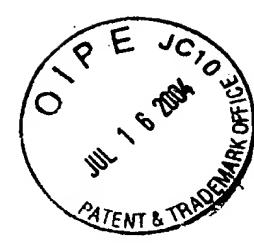


FIG. 1D1

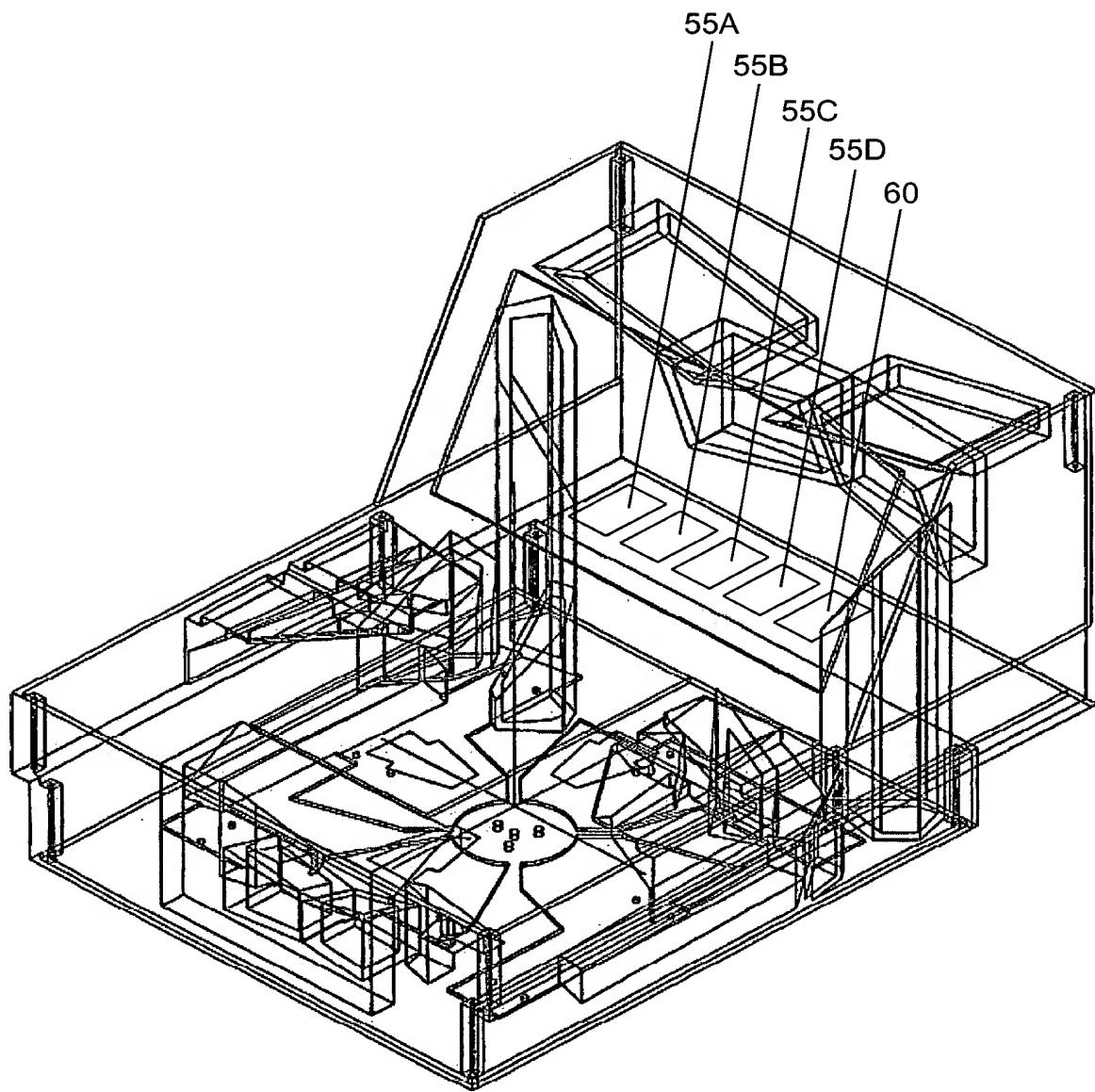


FIG. 1D2

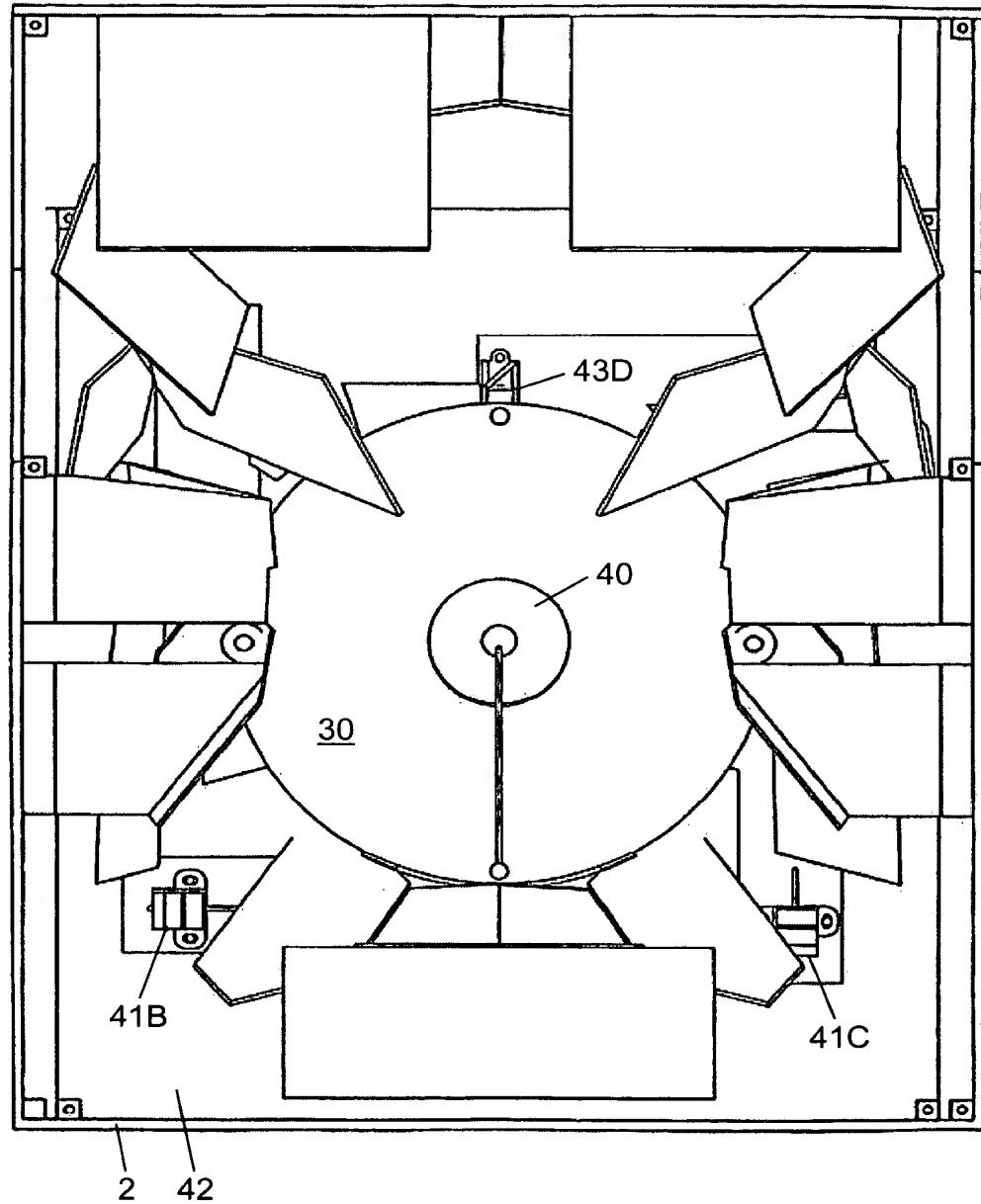
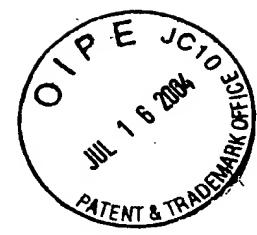


FIG. 1E

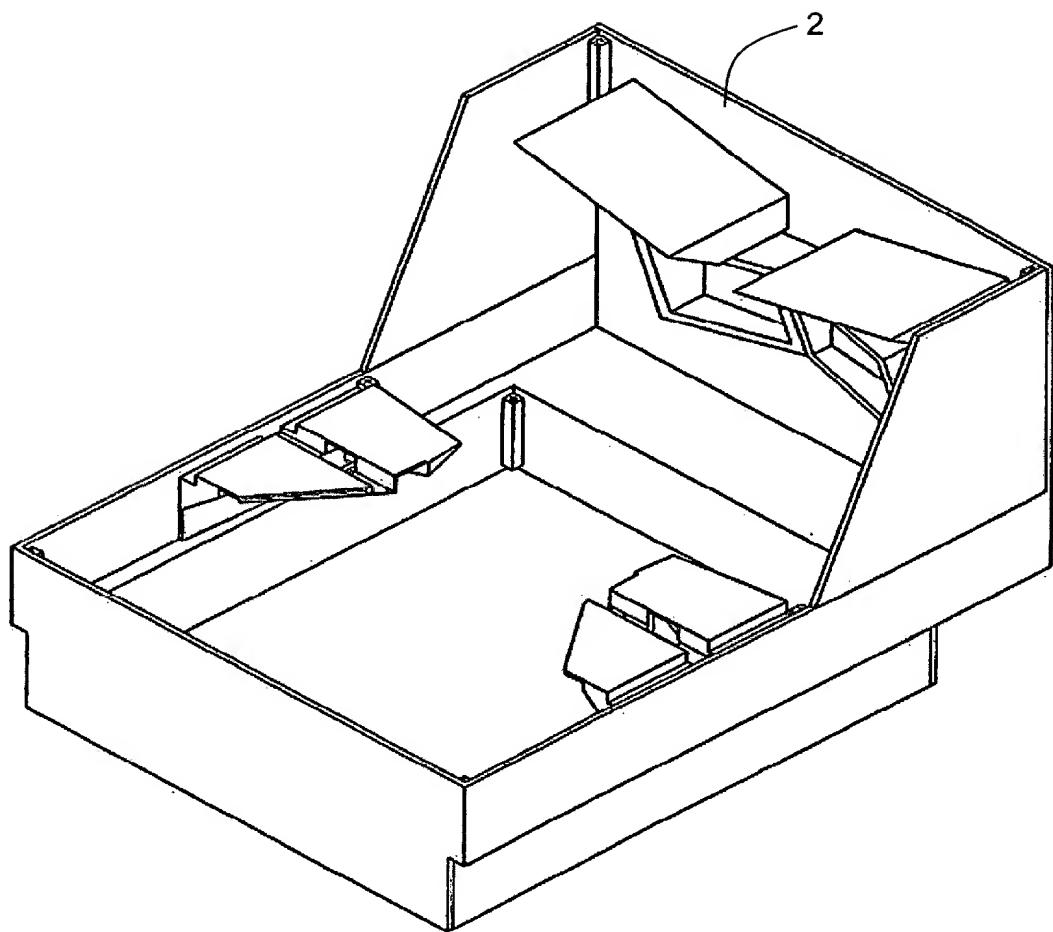
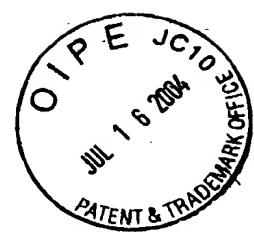


FIG. 1F

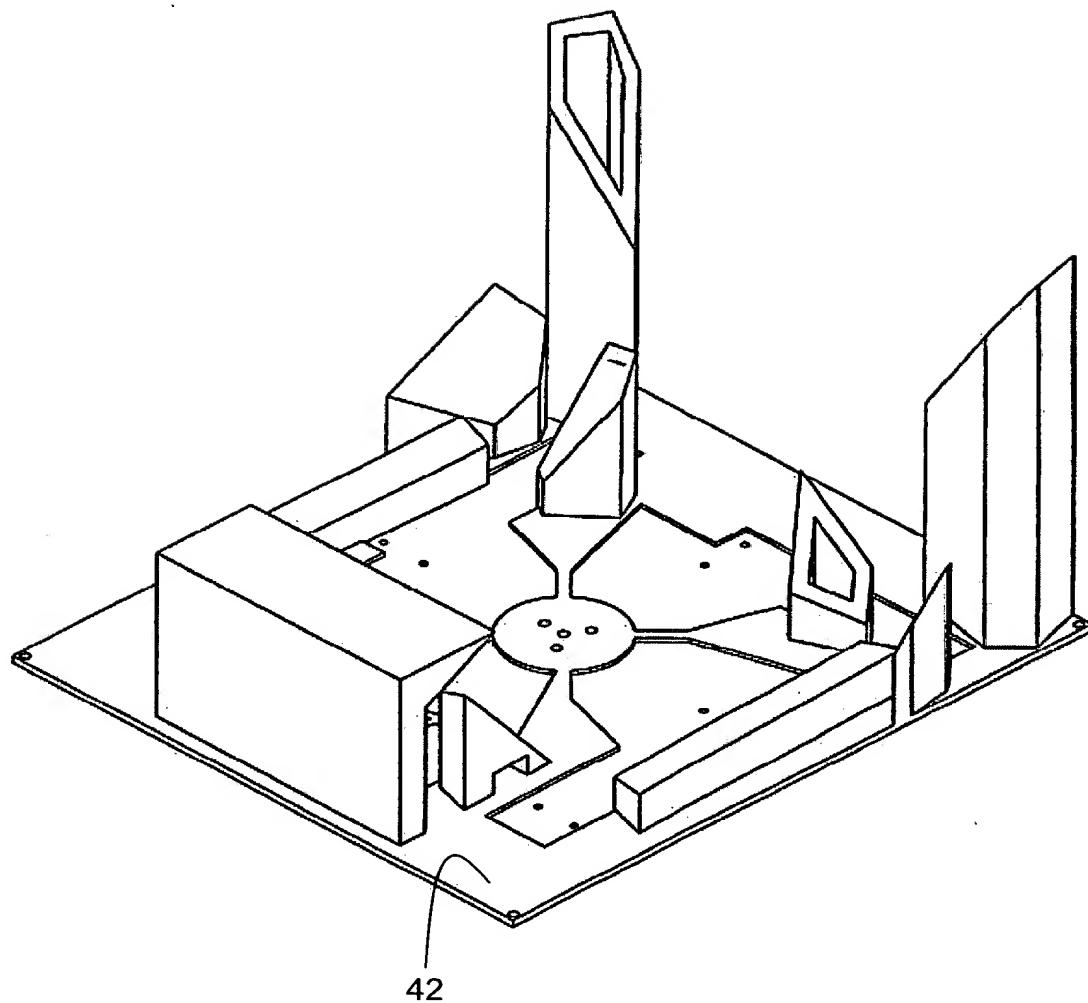


FIG. 1G

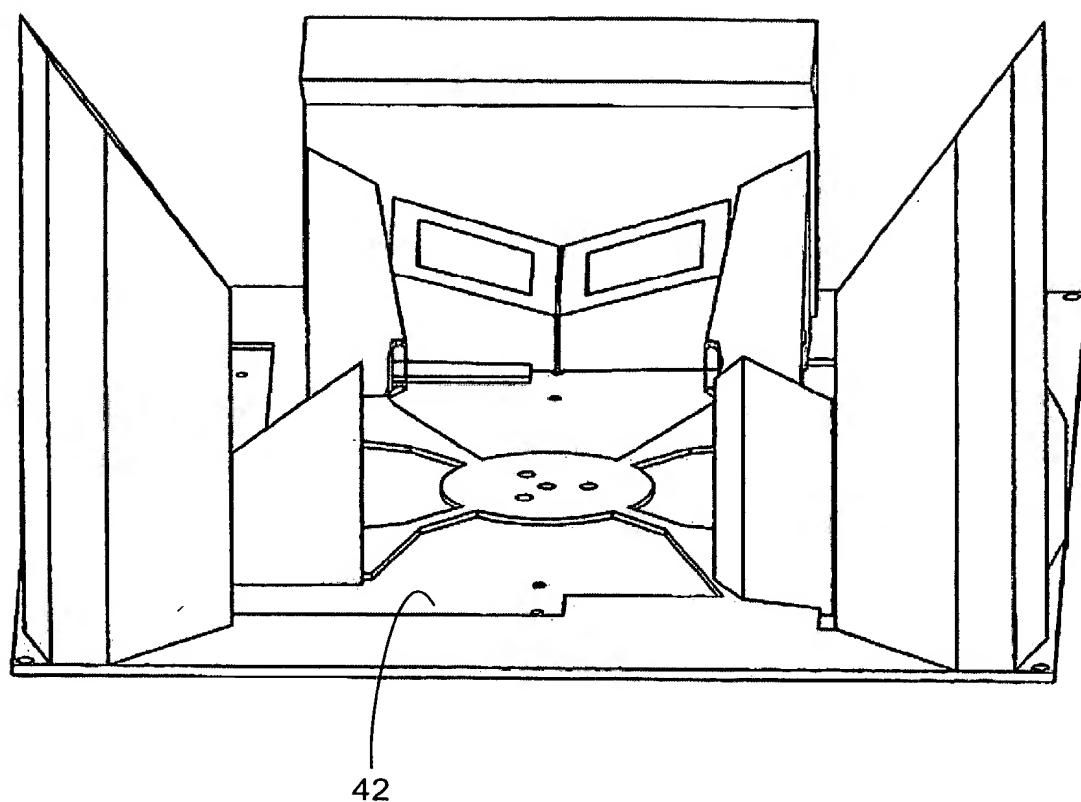
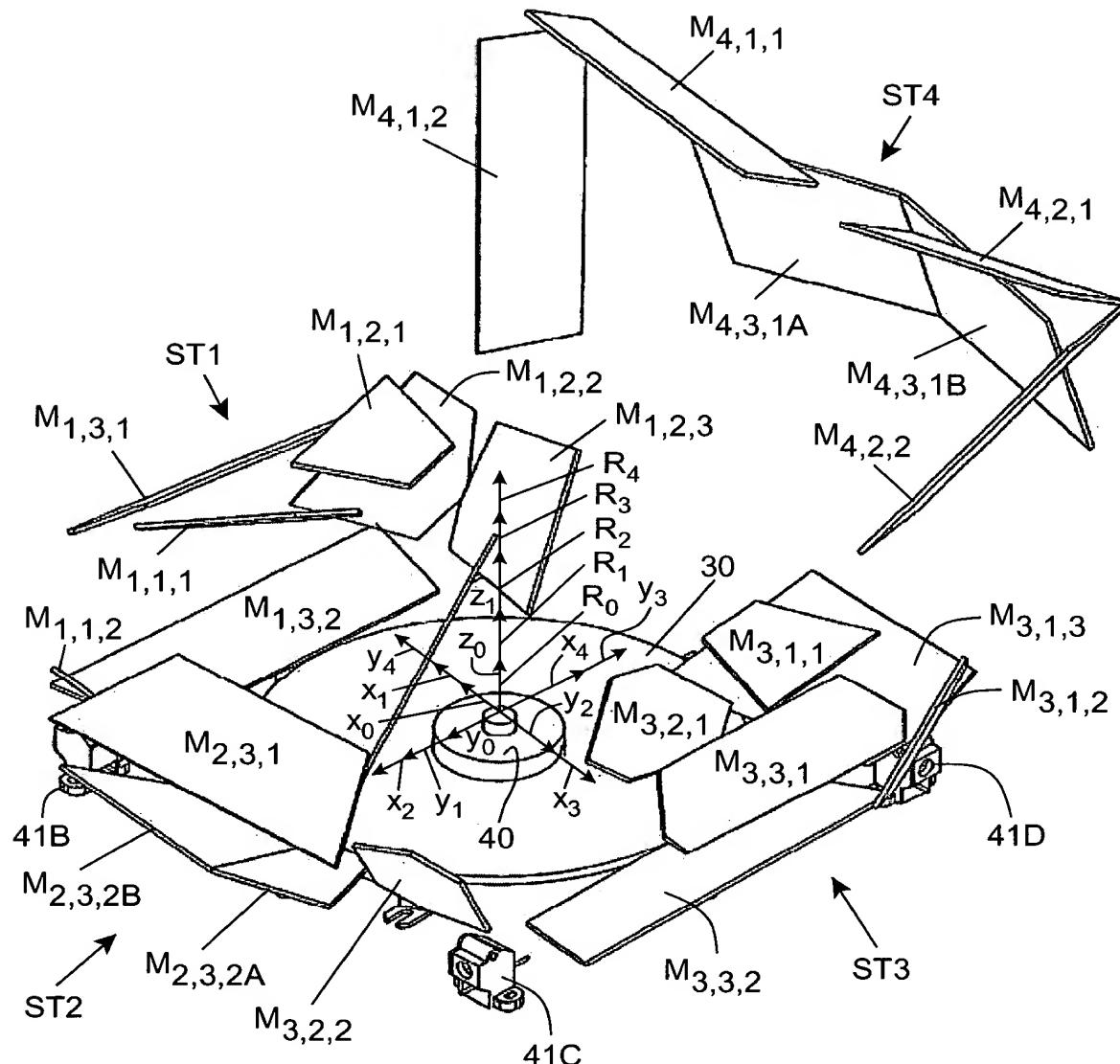
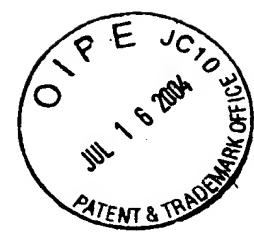


FIG. 1H



Define:  $R_1, R_2, R_3, R_4, R_0$

FIG. 2A1

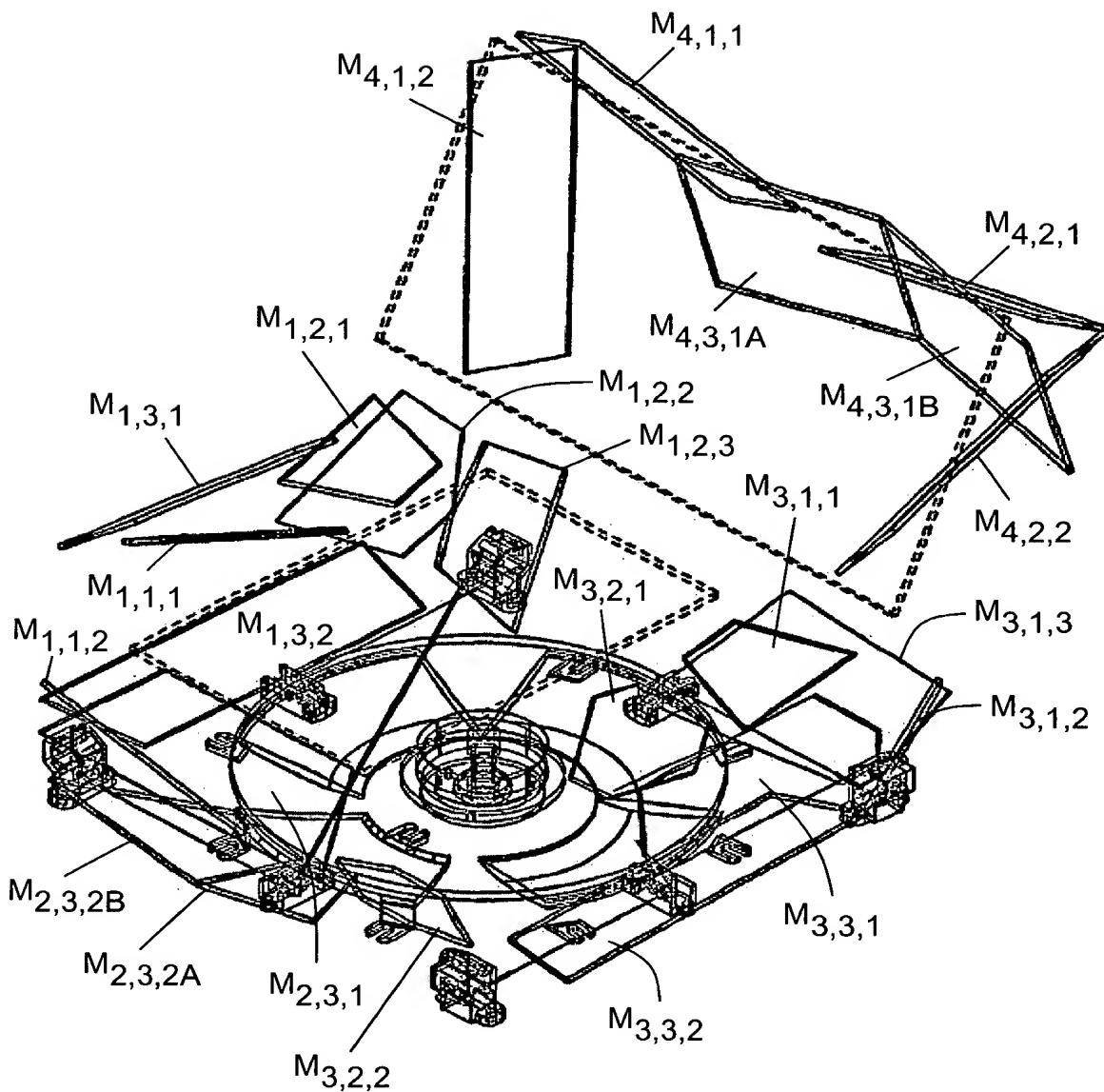
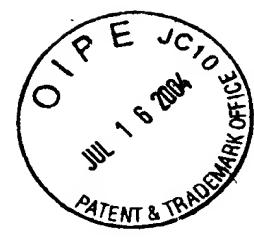


FIG. 2A2

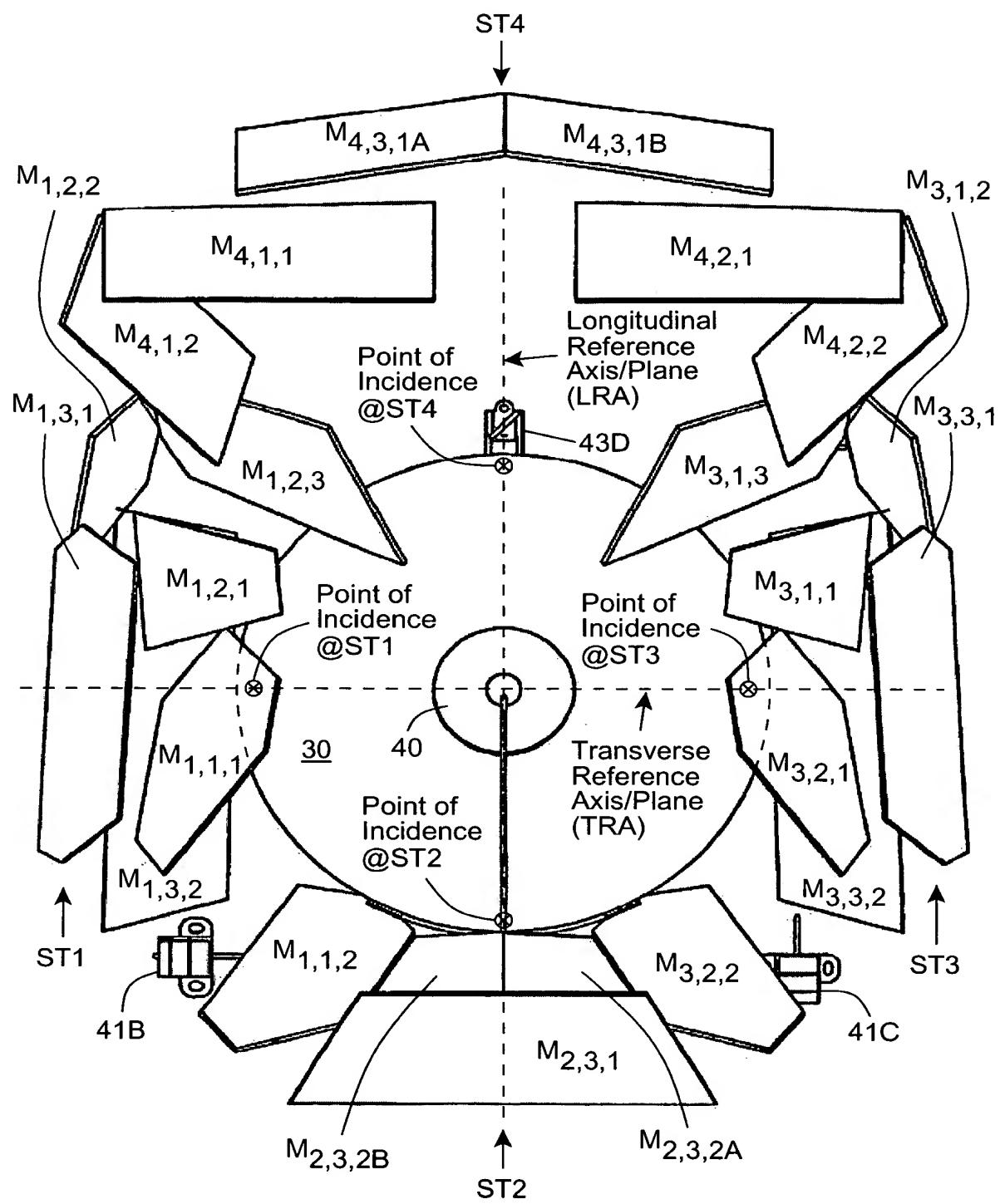
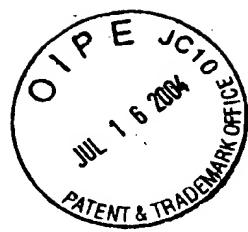


FIG. 2B1

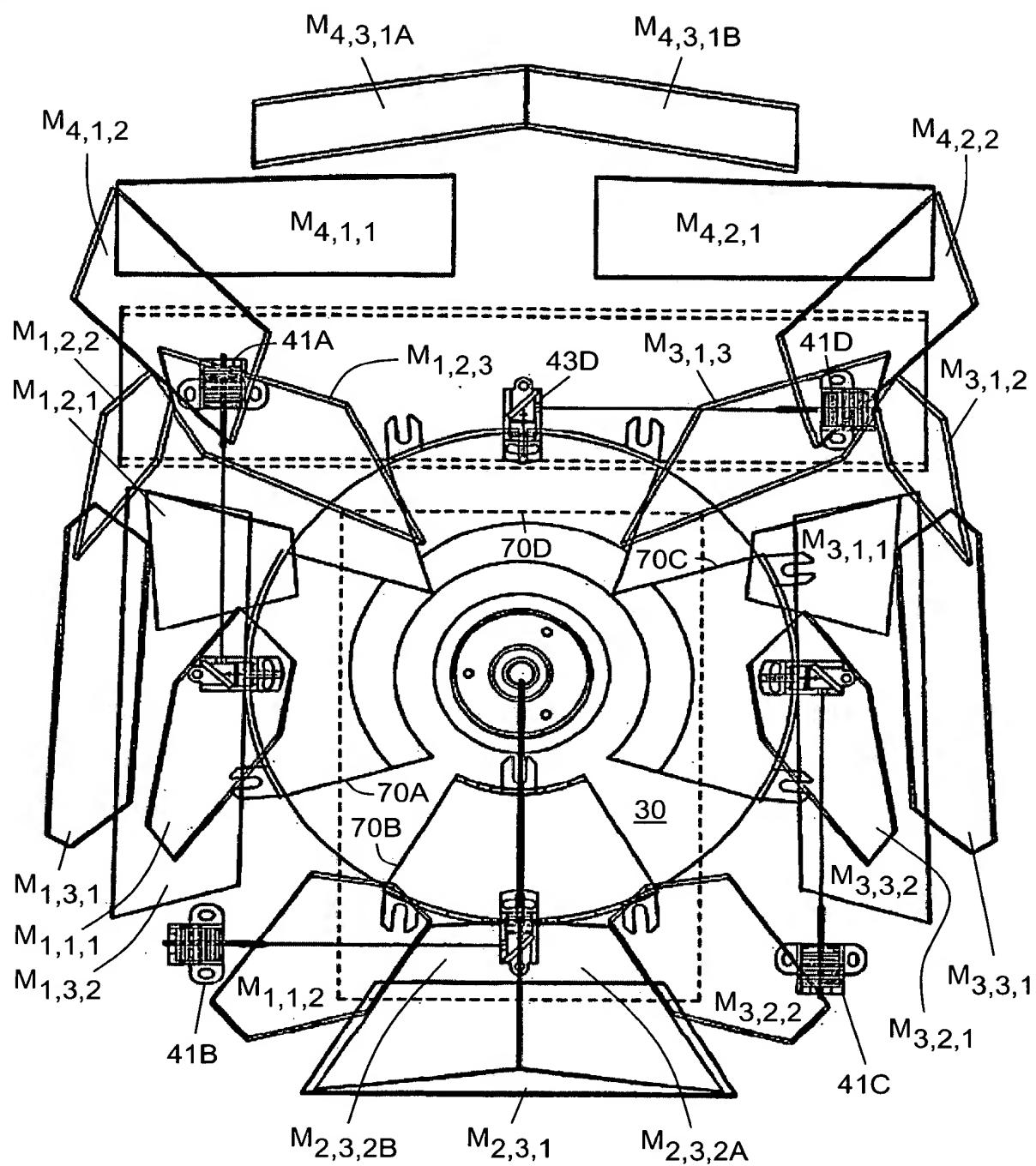
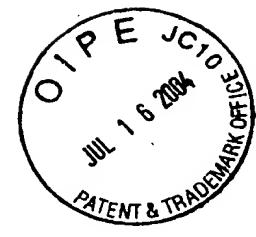


FIG. 2B2

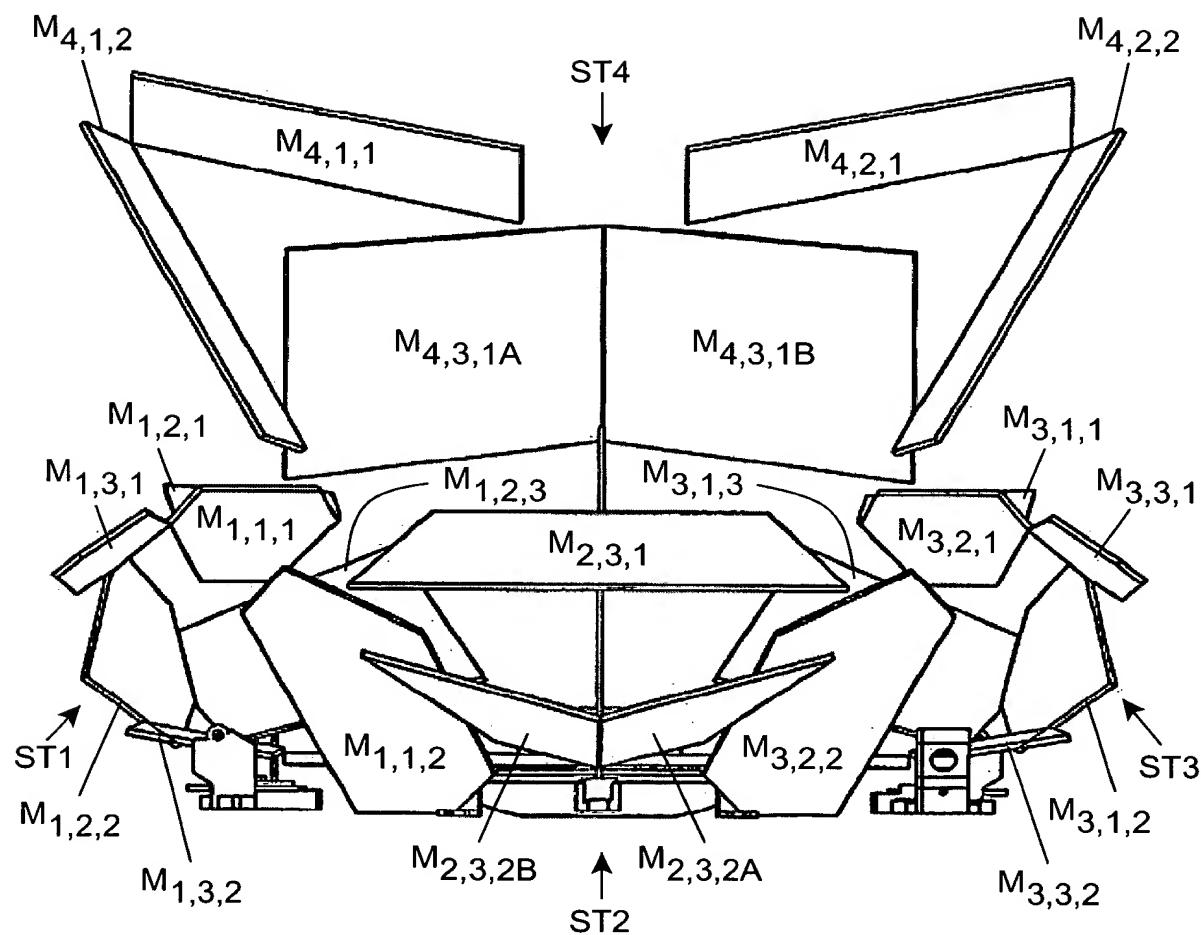
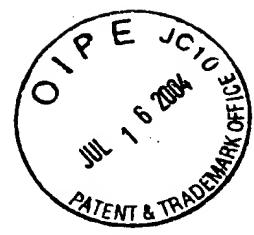


FIG. 2C1

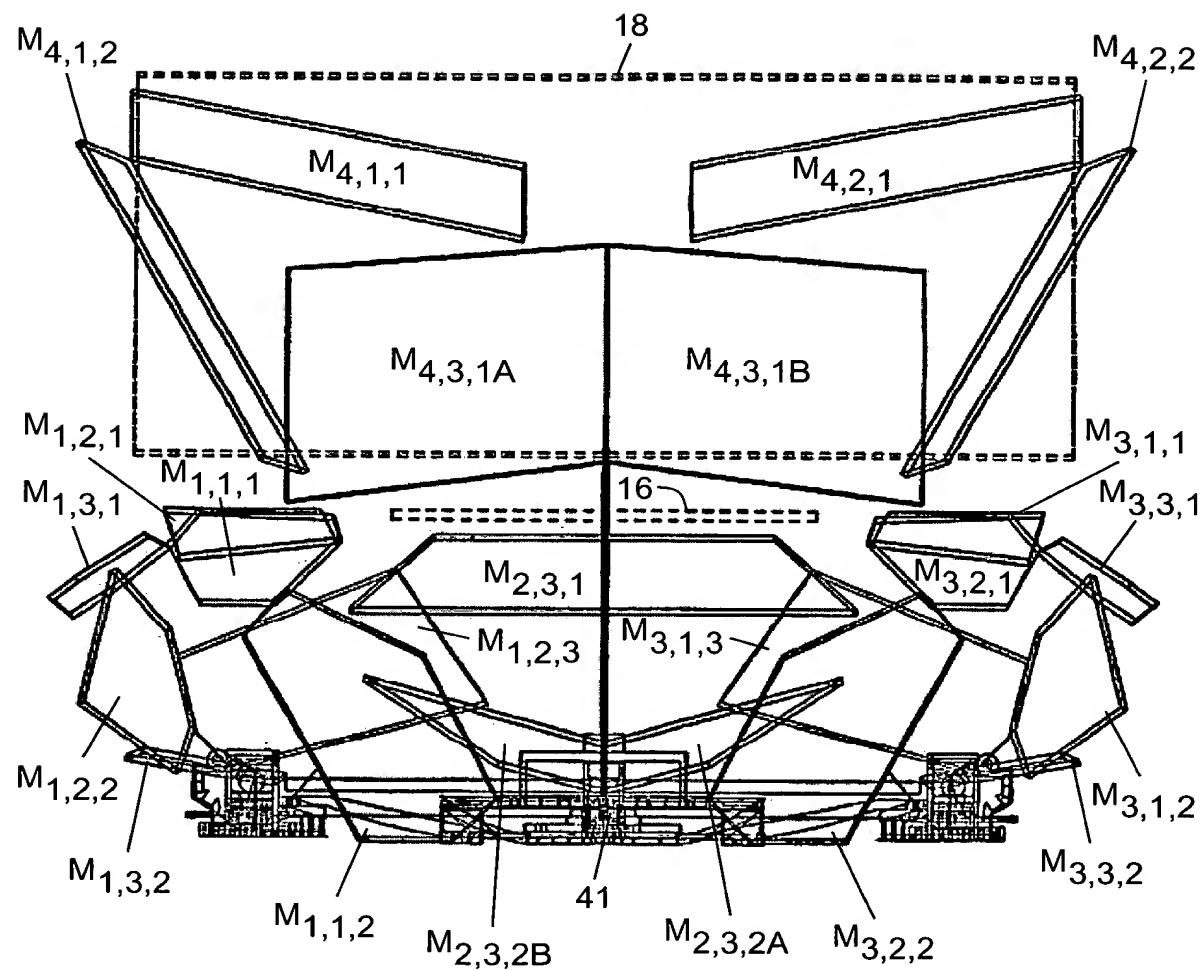


FIG. 2C2

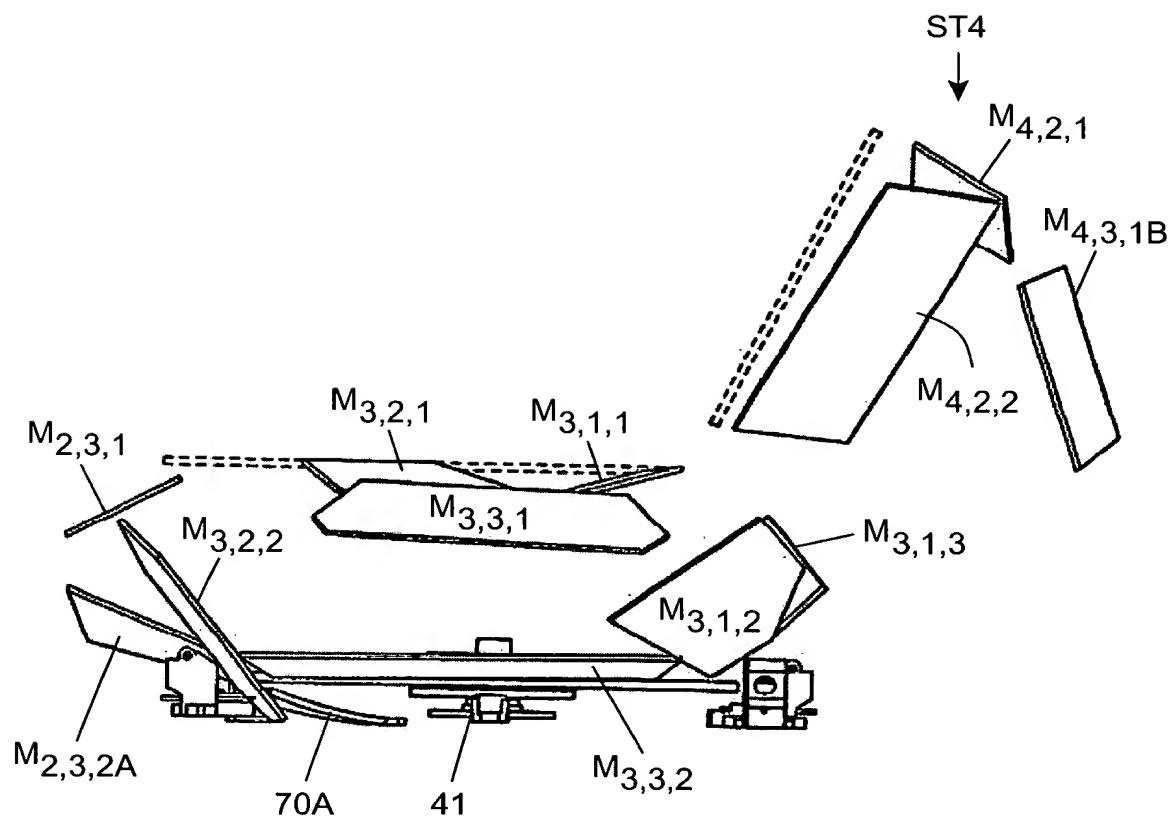


FIG. 2D1

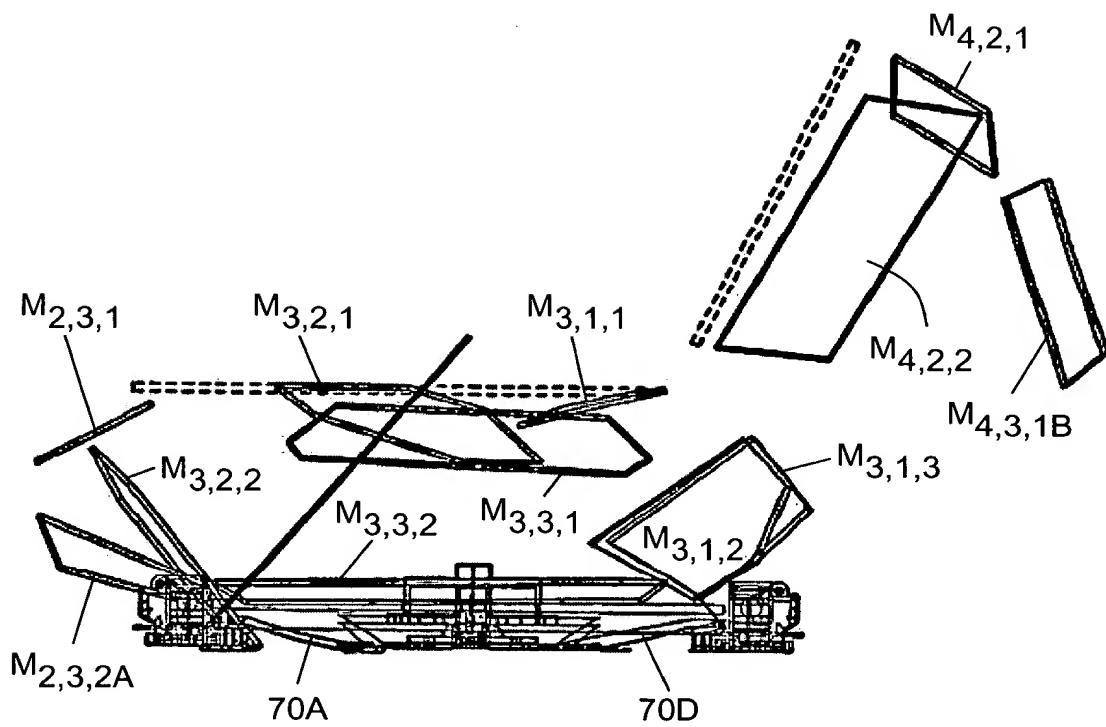
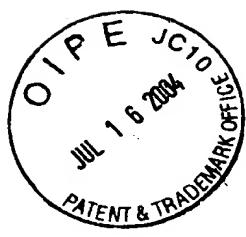


FIG. 2D2

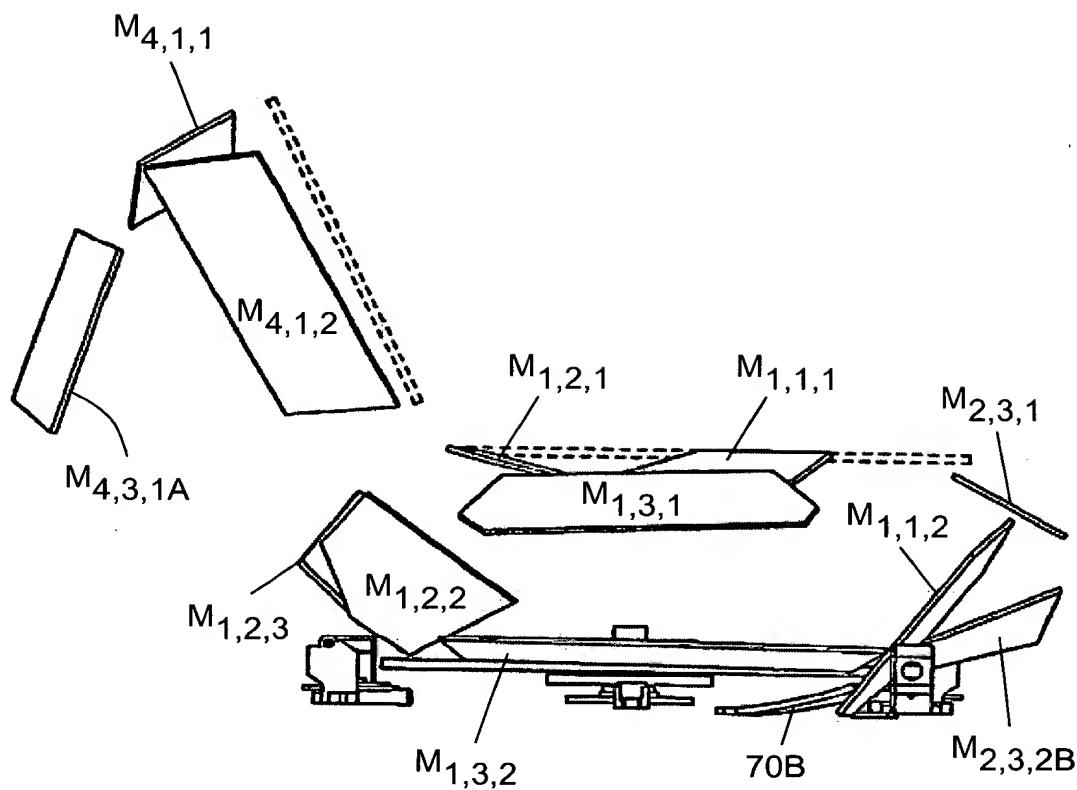
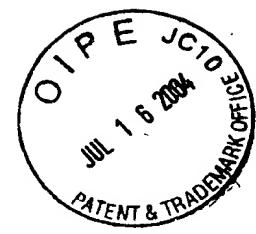


FIG. 2E1

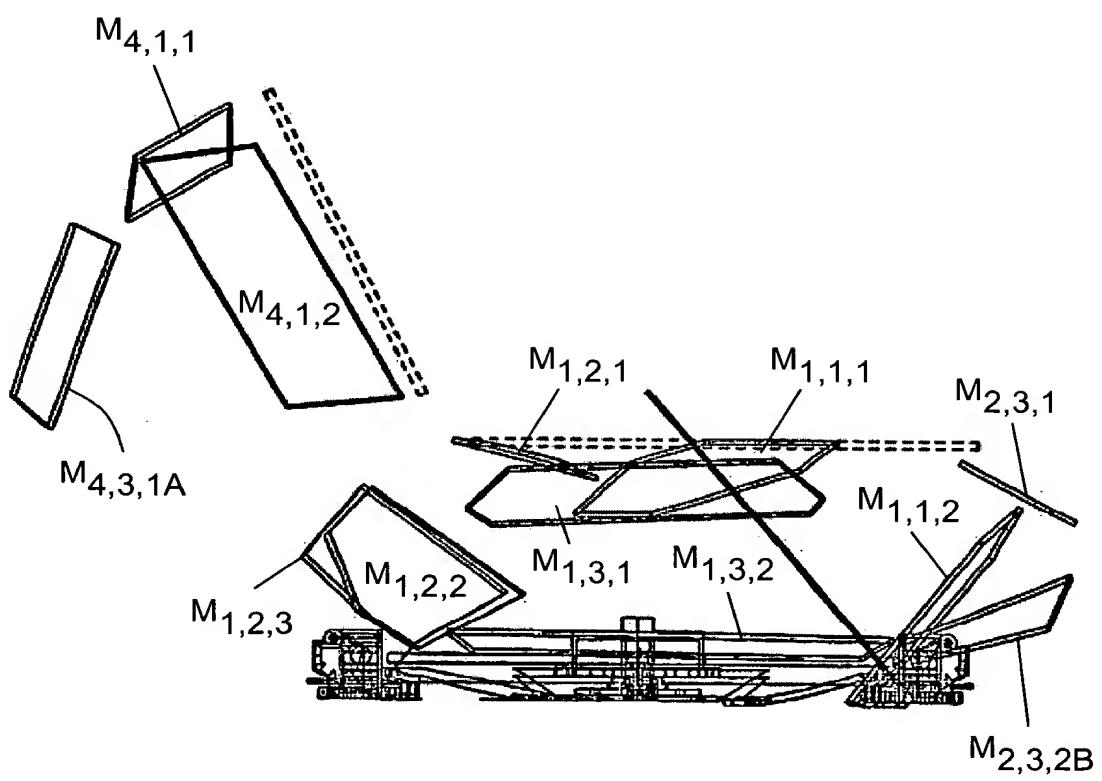
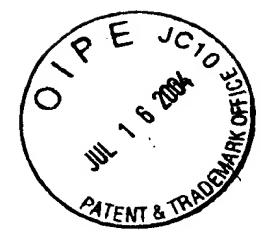


FIG. 2E2

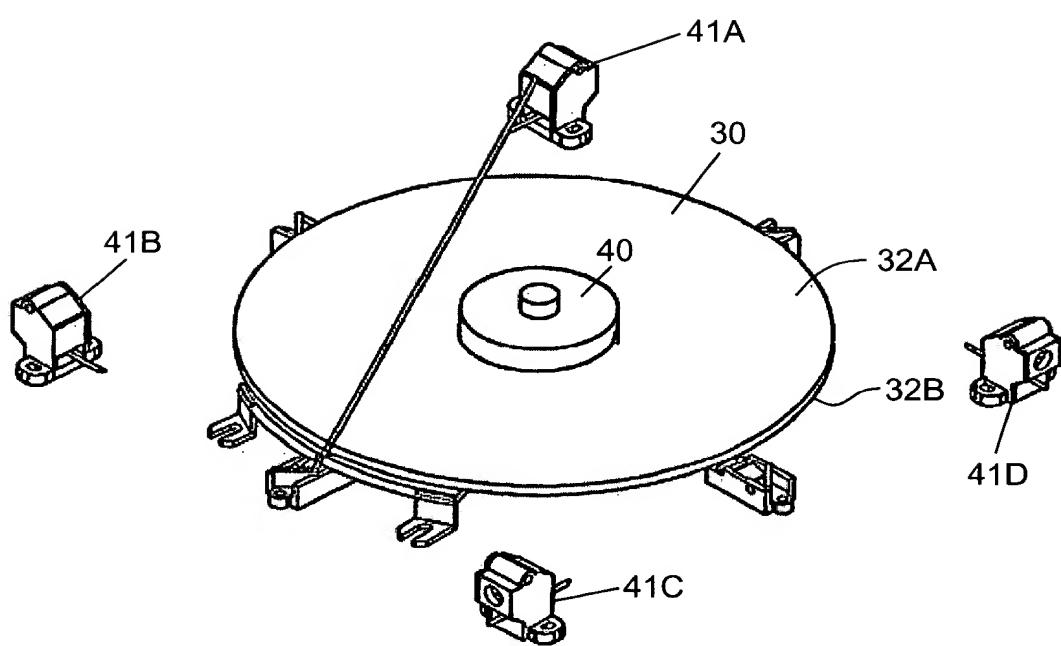
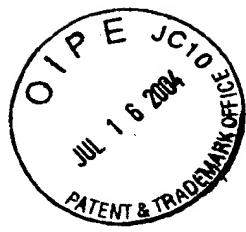


FIG. 2F1

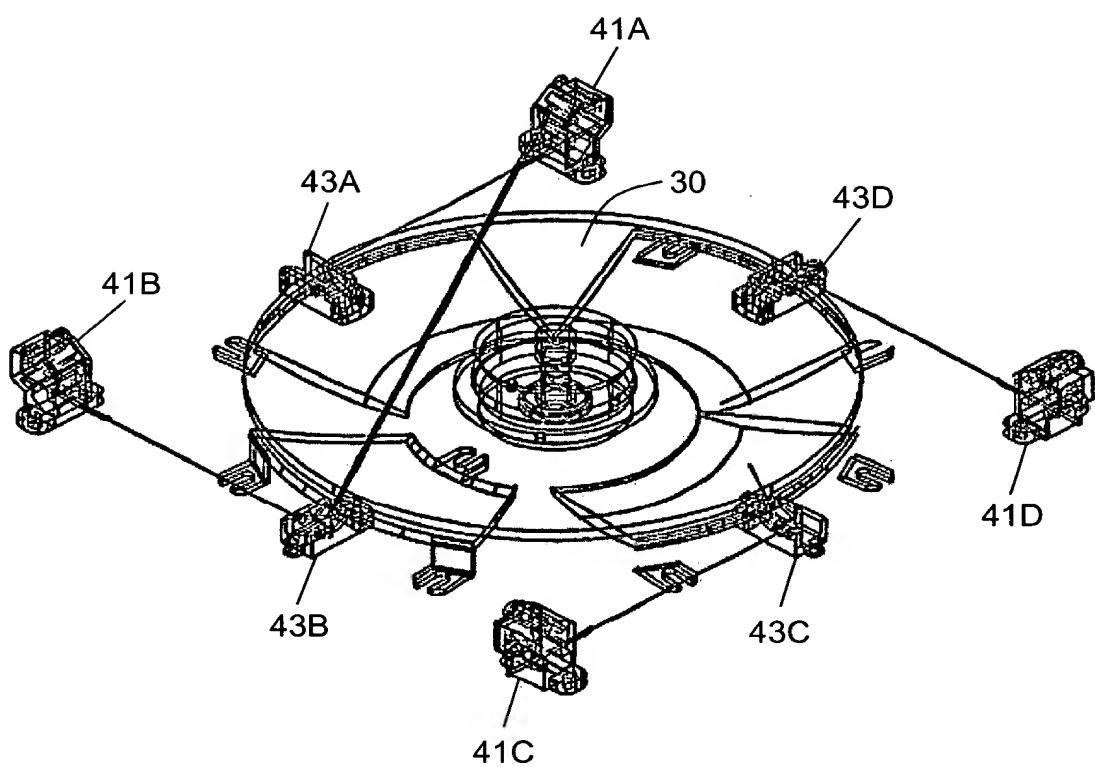
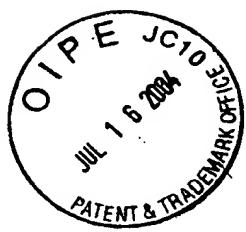


FIG. 2F2

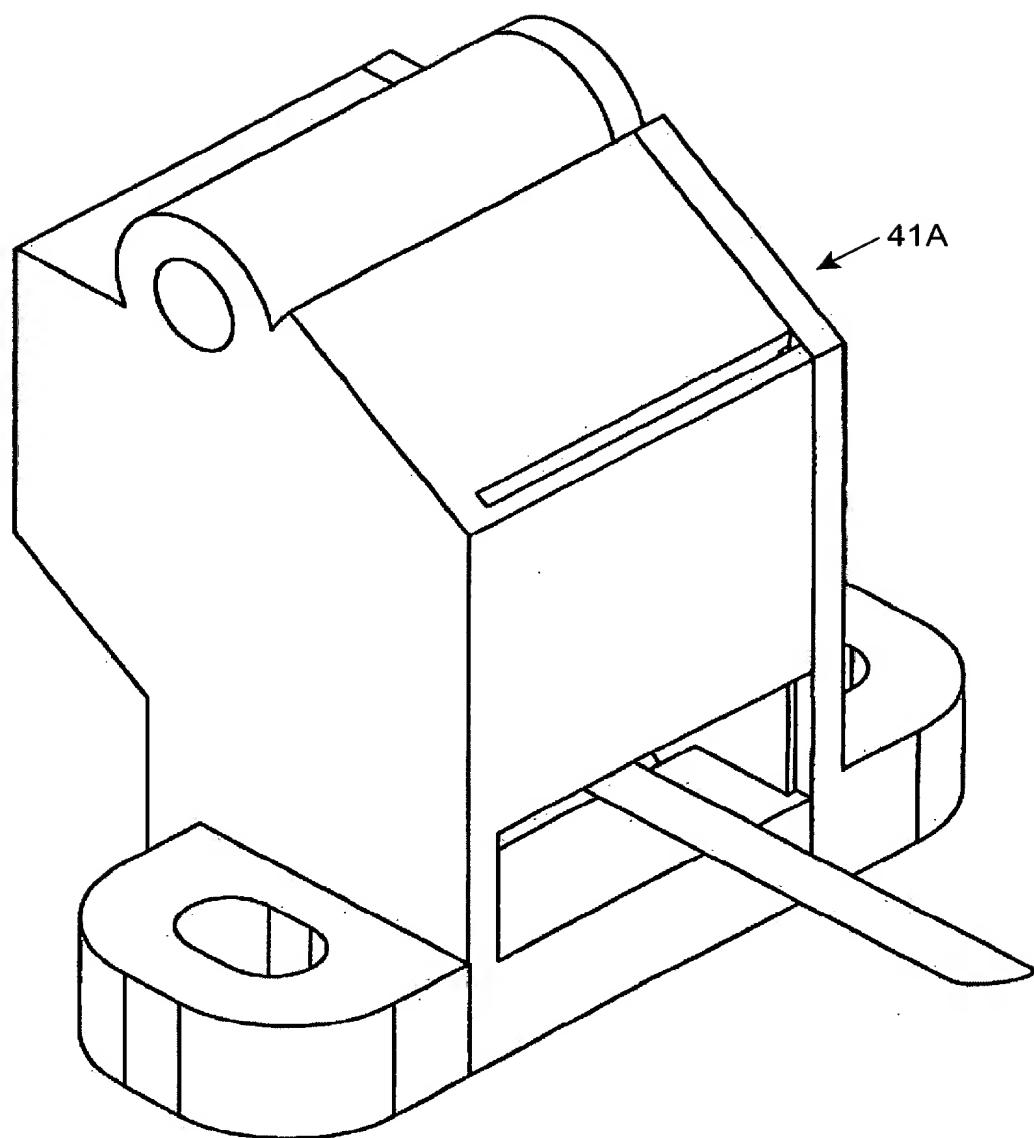
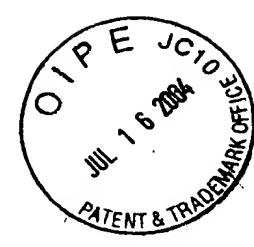


FIG. 2G1

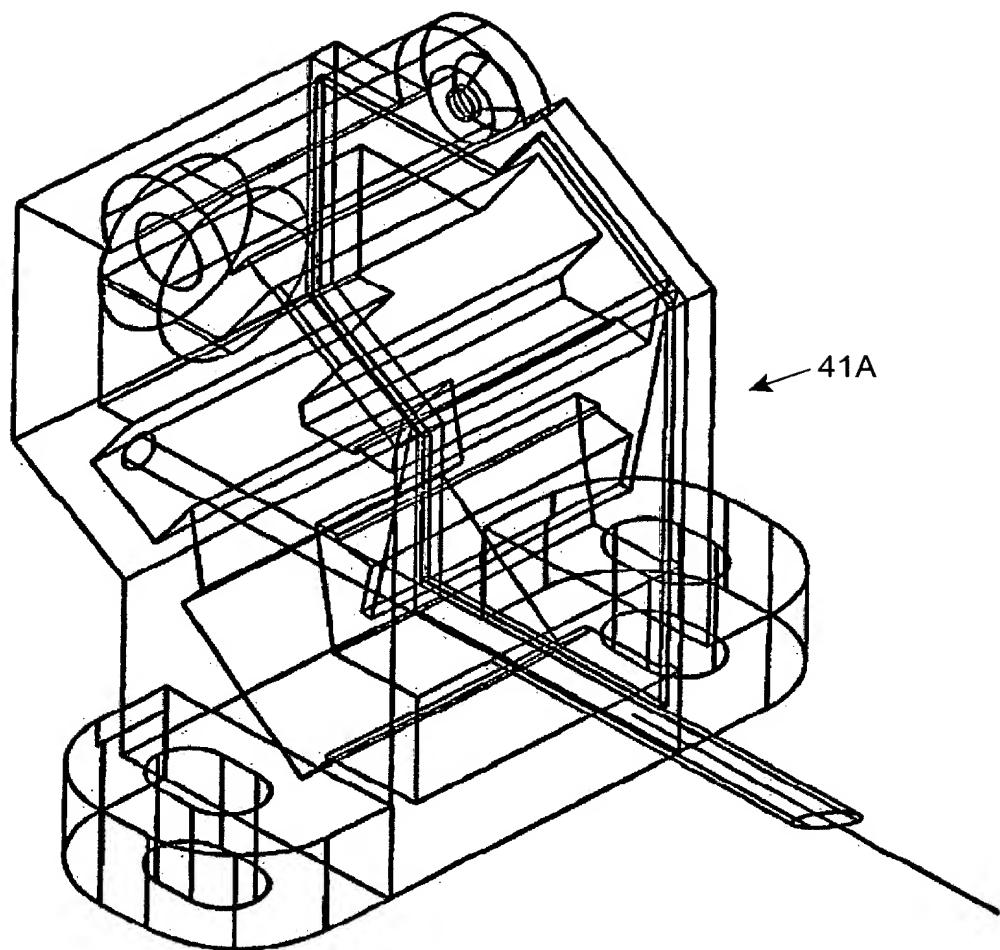
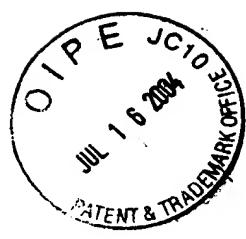


FIG. 2G2

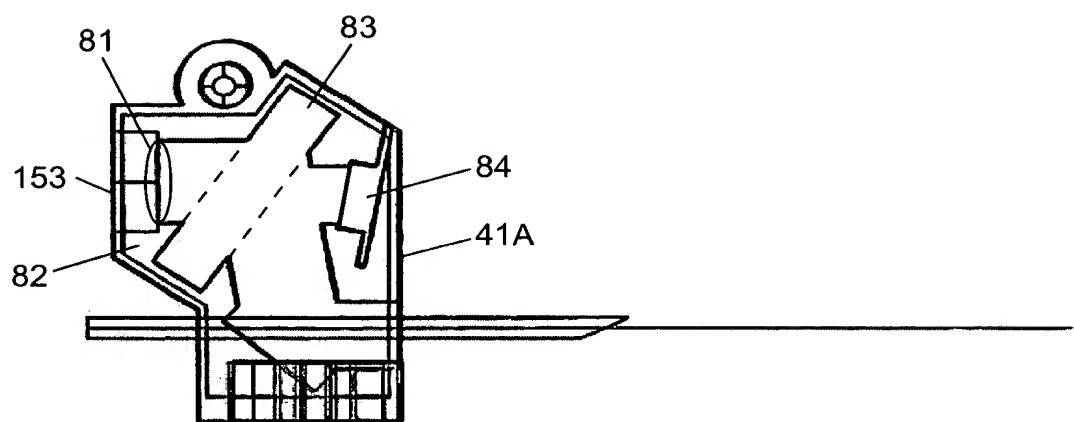
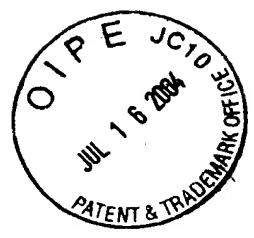


FIG. 2G3

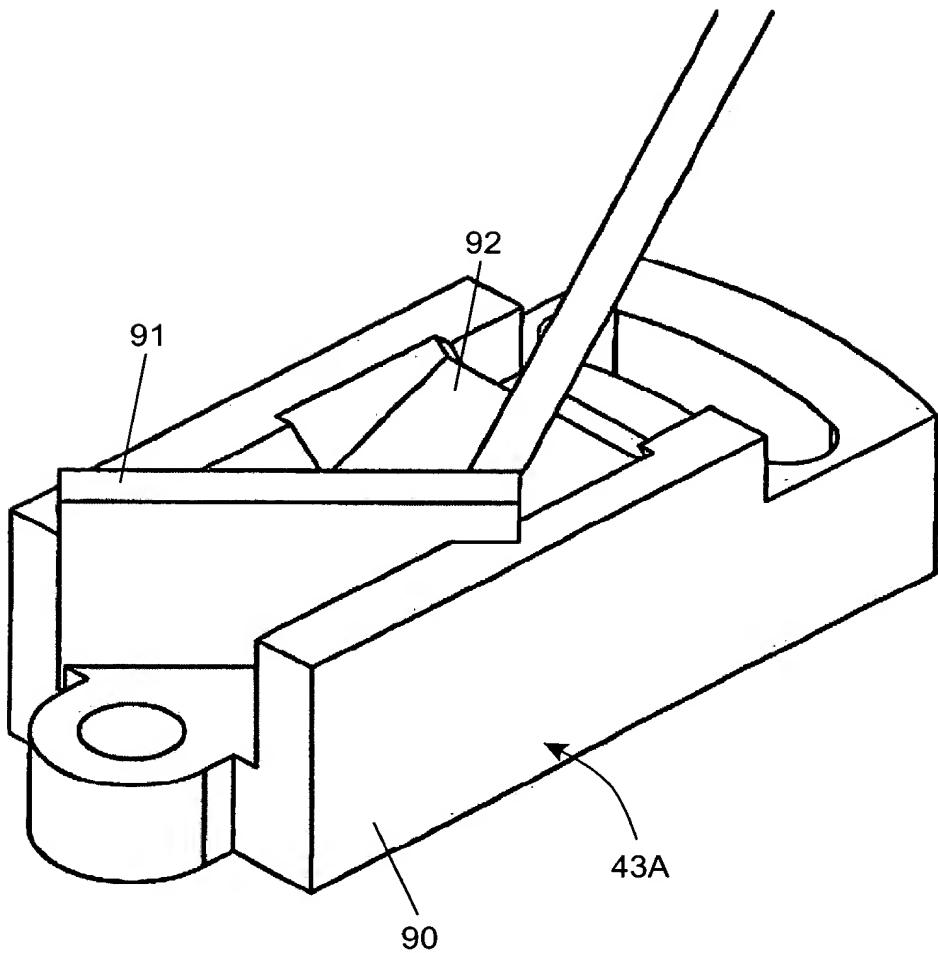
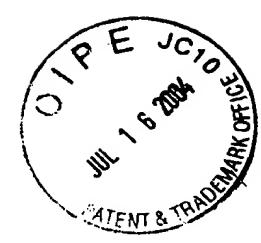


FIG. 2H1

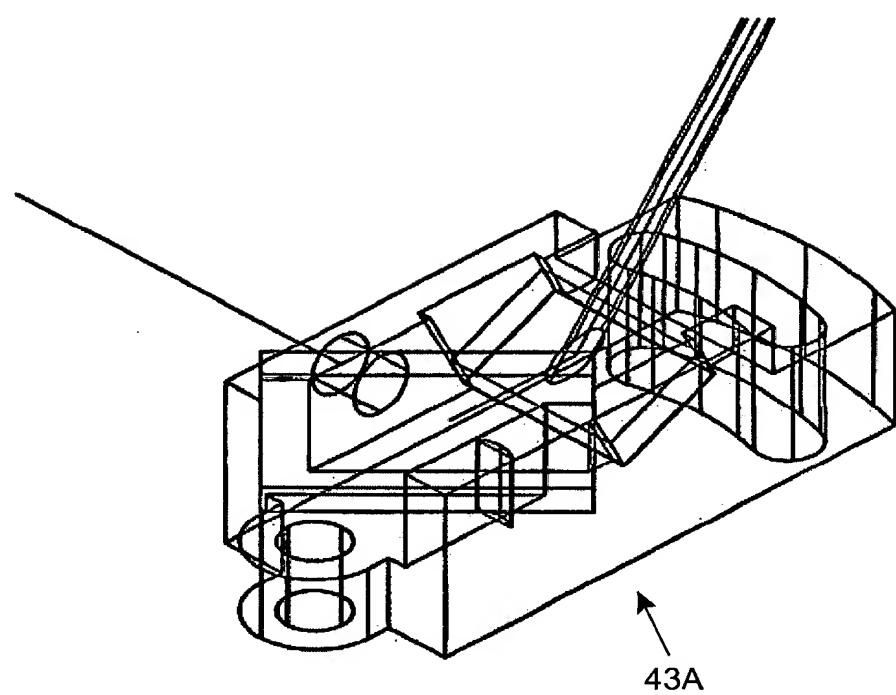
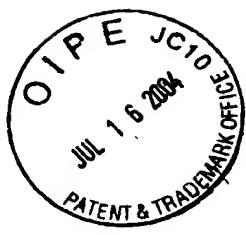


FIG. 2H2

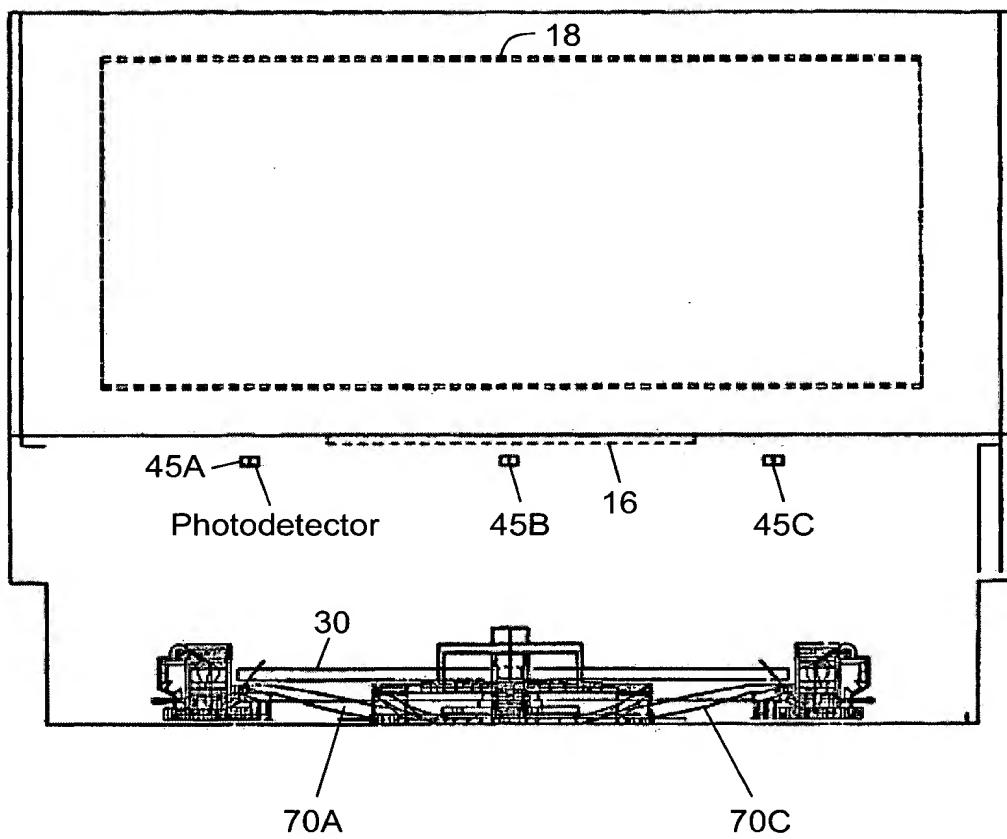
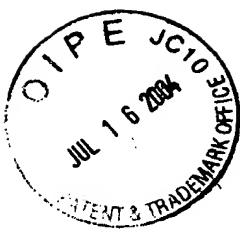


FIG. 2I1

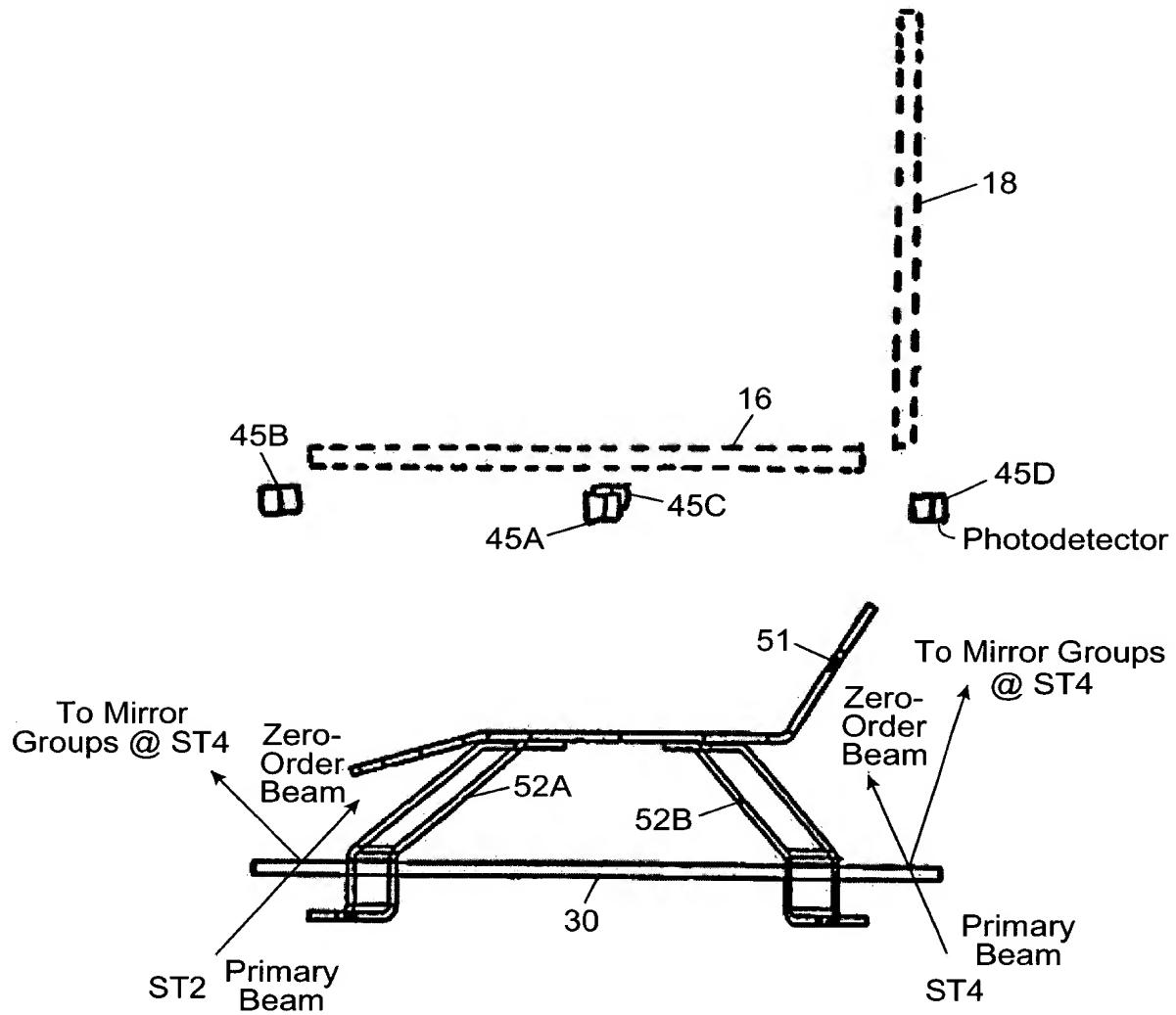
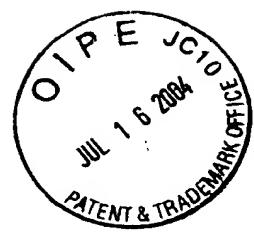


FIG. 2I2

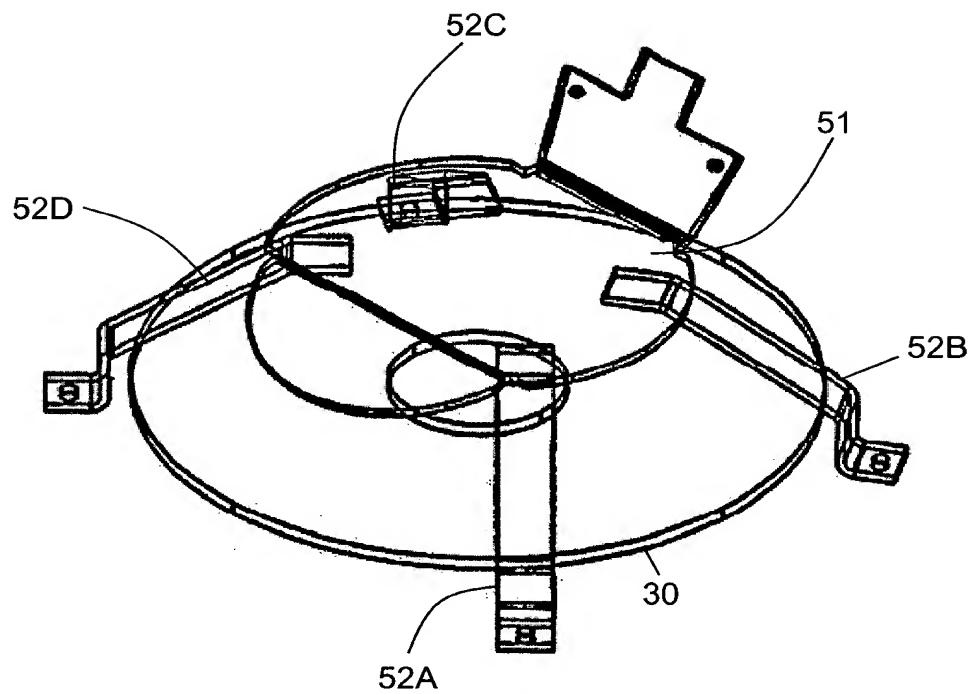
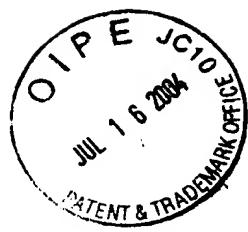


FIG. 2I3

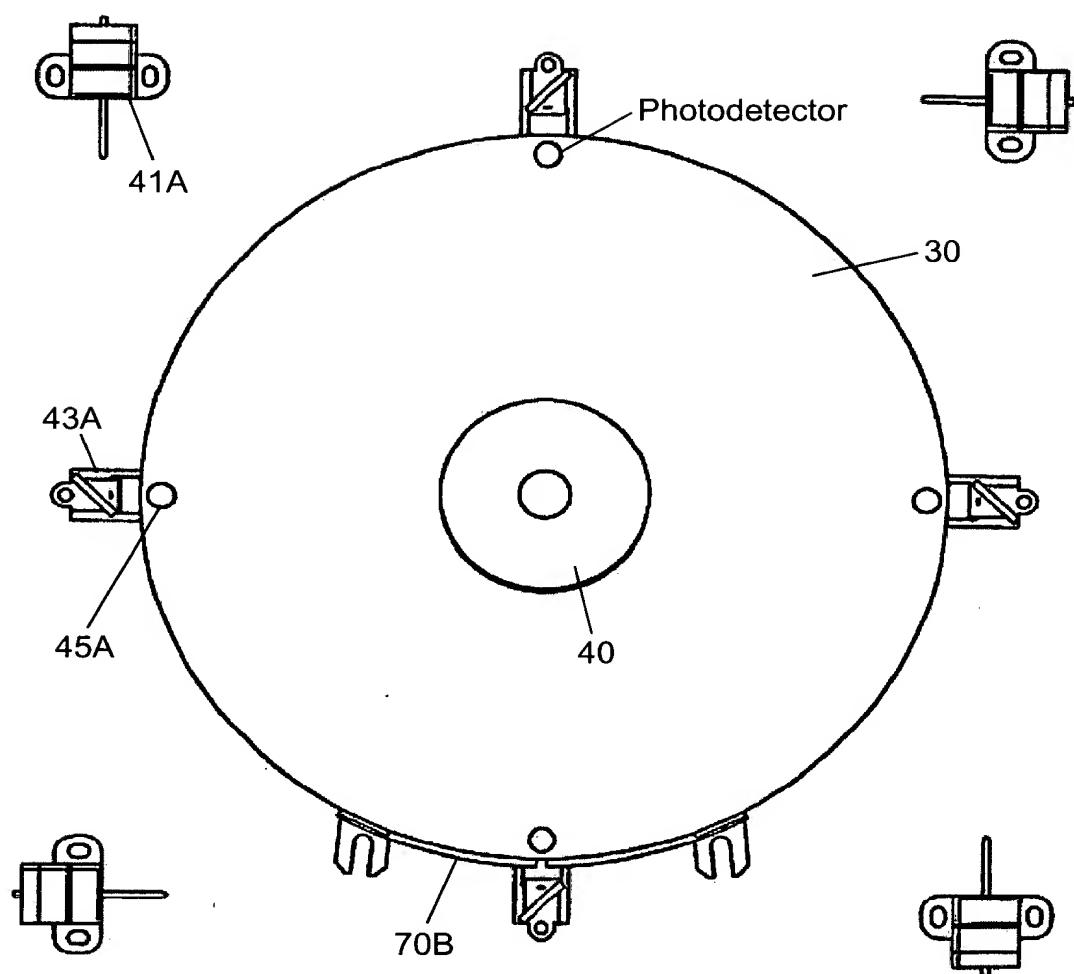
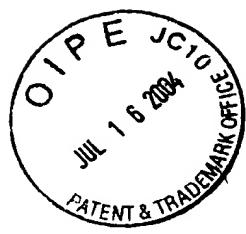


FIG. 2J1

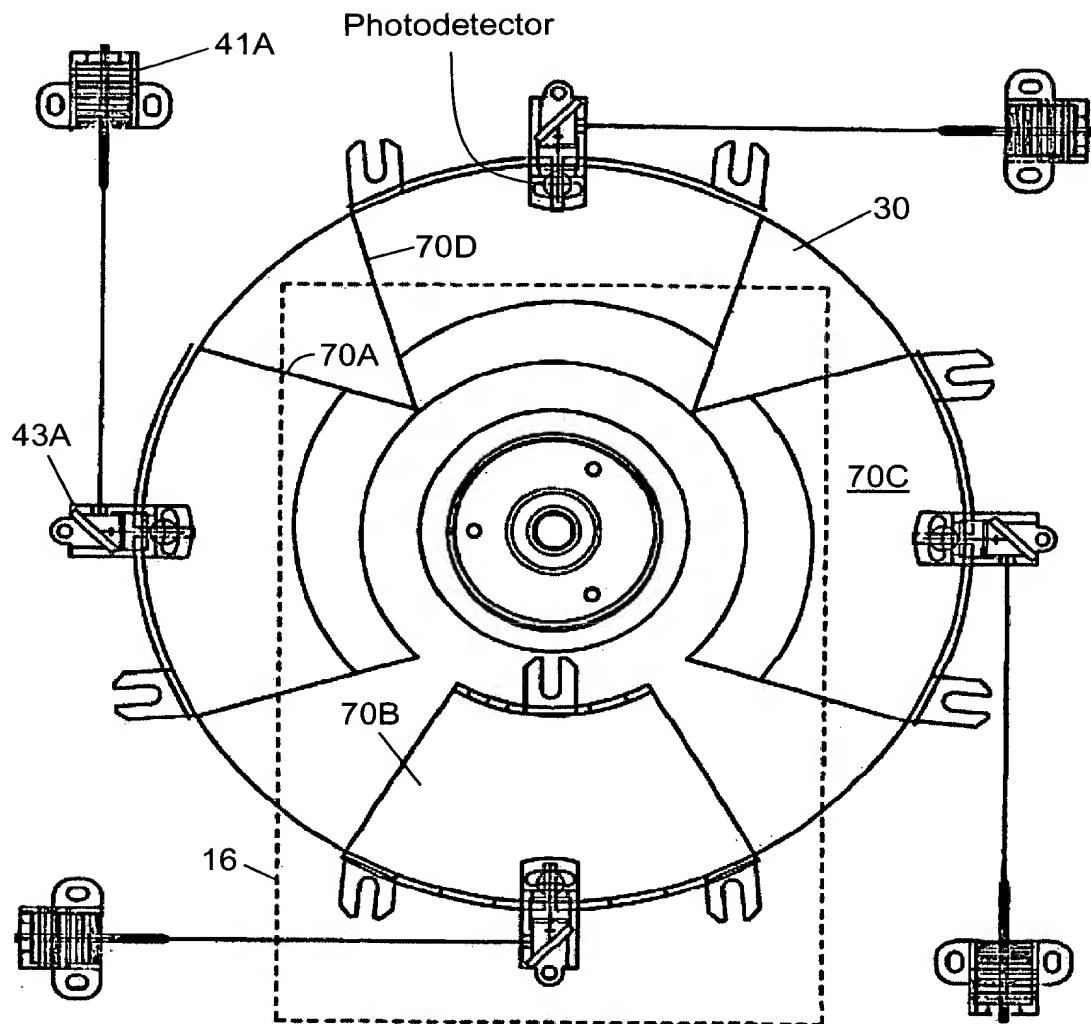
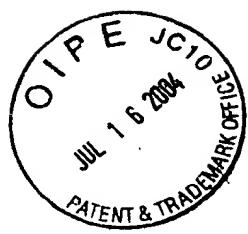


FIG. 2J2

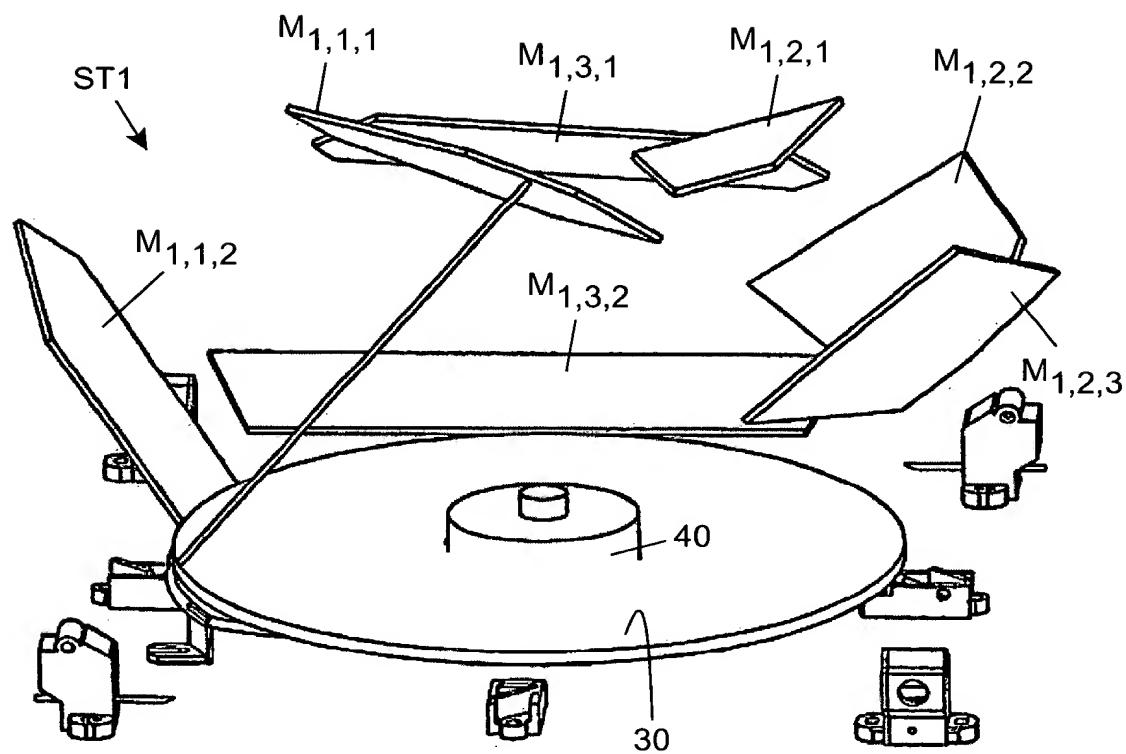


FIG. 2K

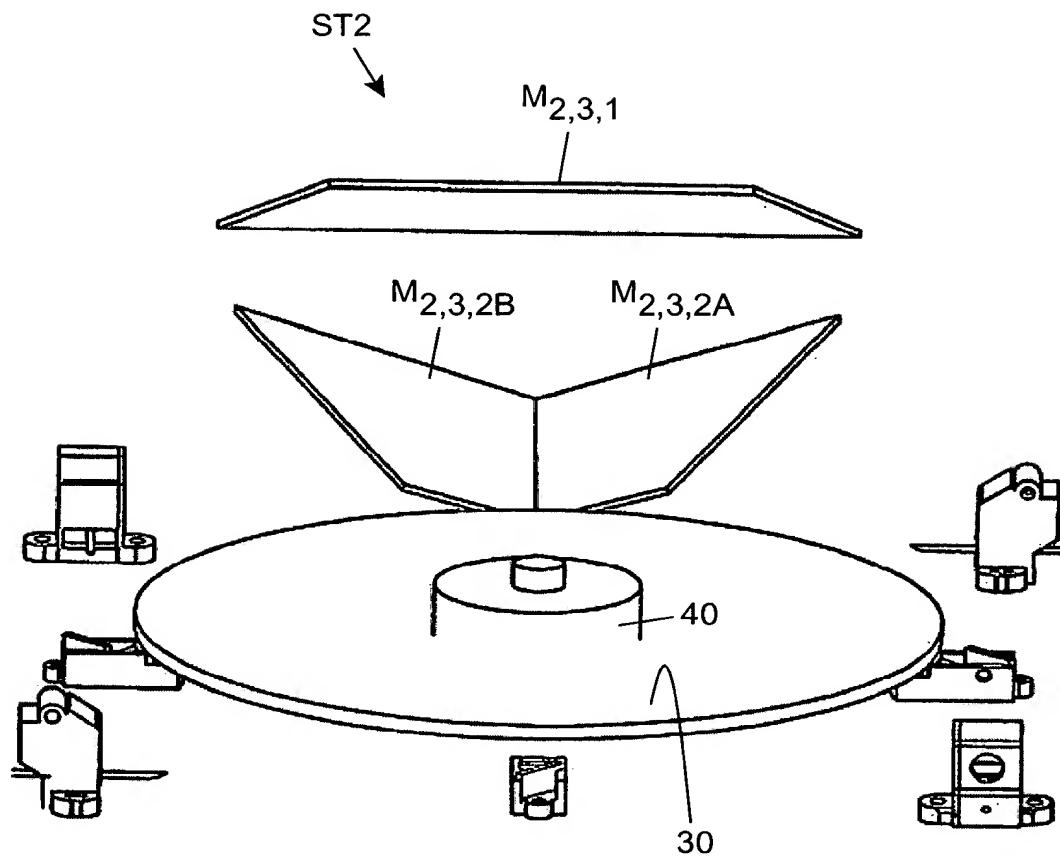


FIG. 2L

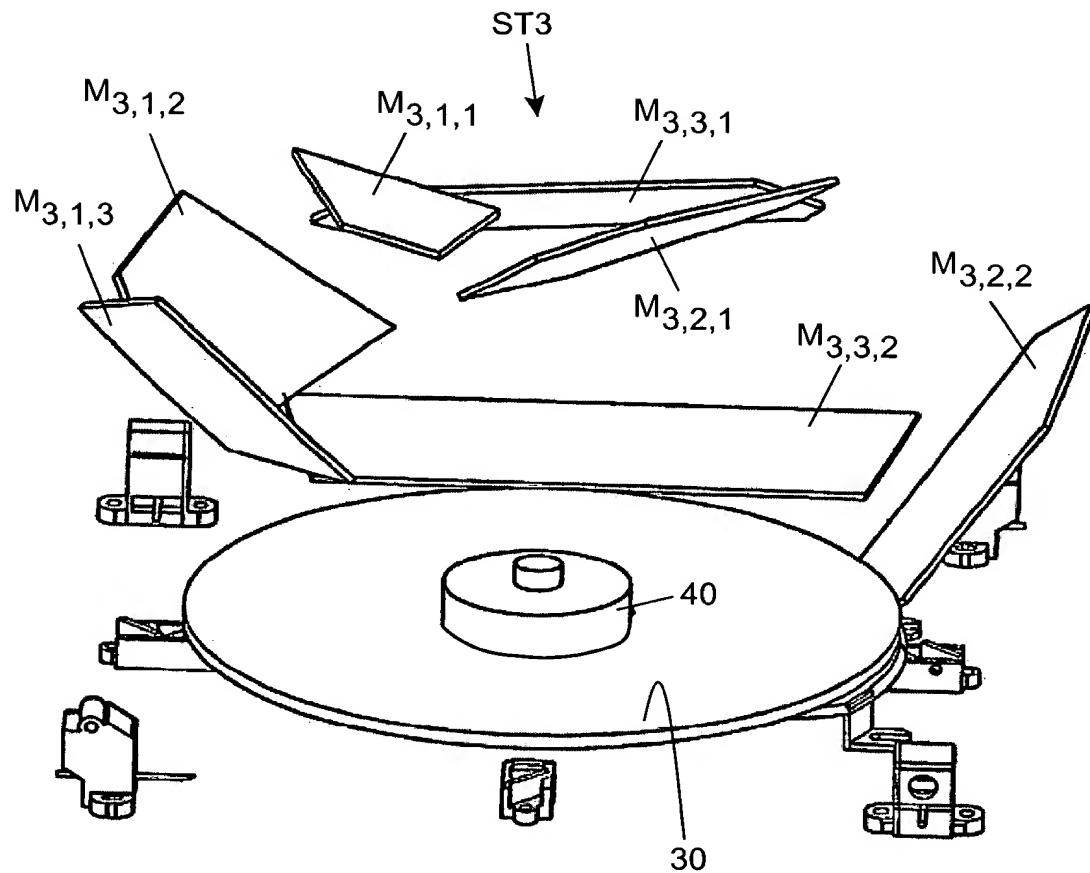
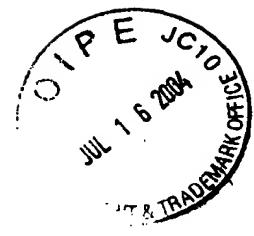


FIG. 2M

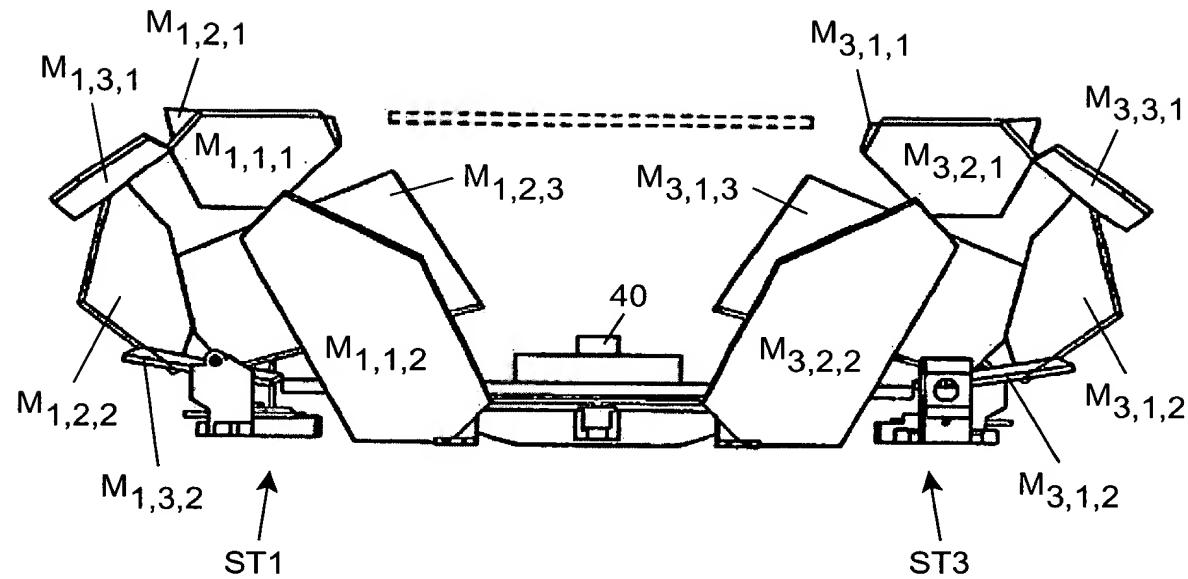
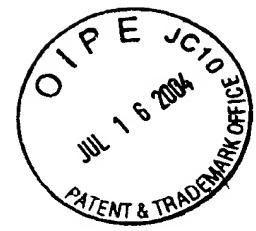


FIG. 2N

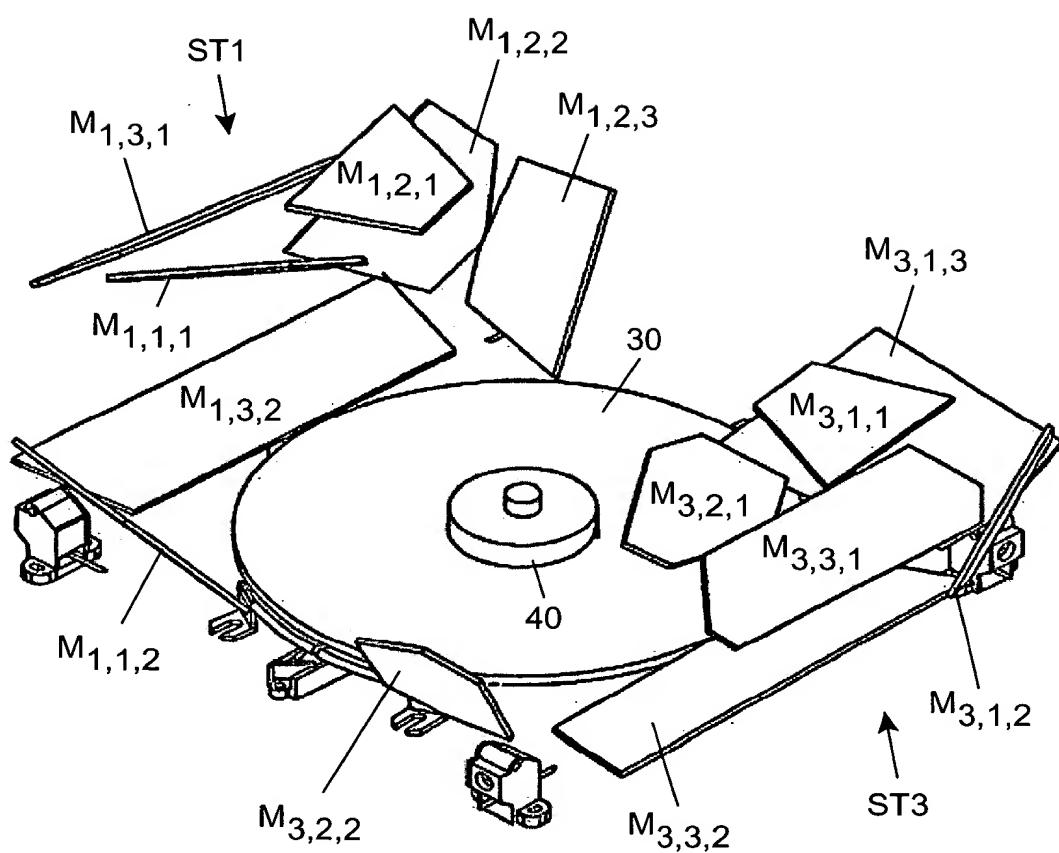
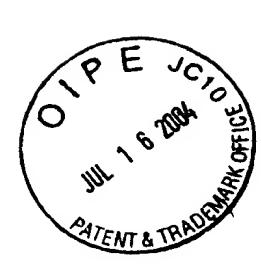


FIG. 2O

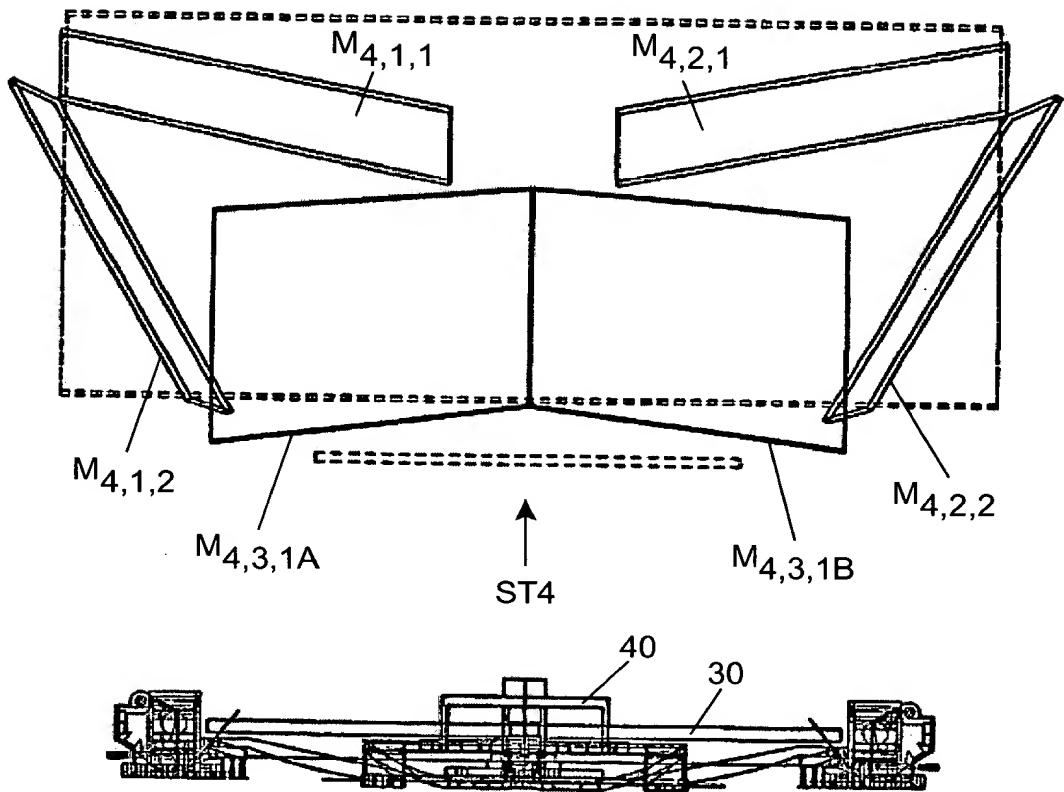
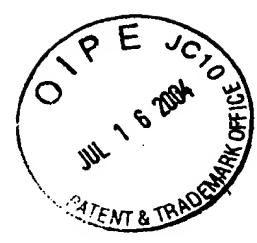


FIG. 2P

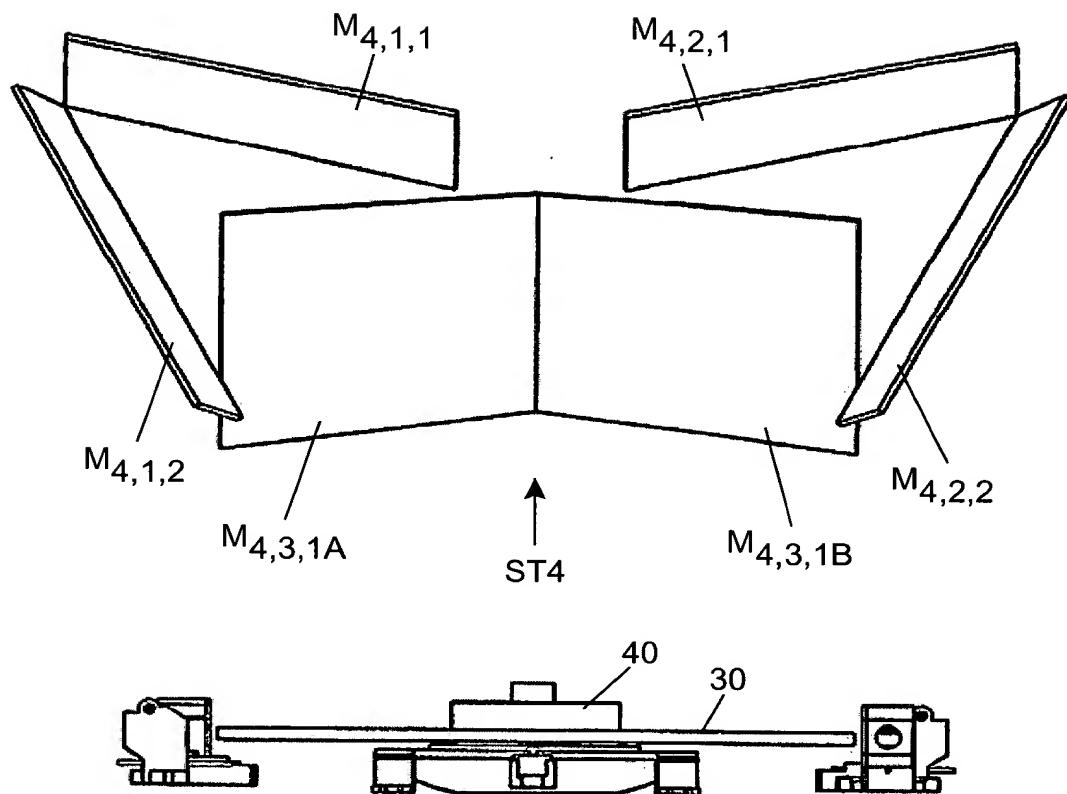


FIG. 2Q

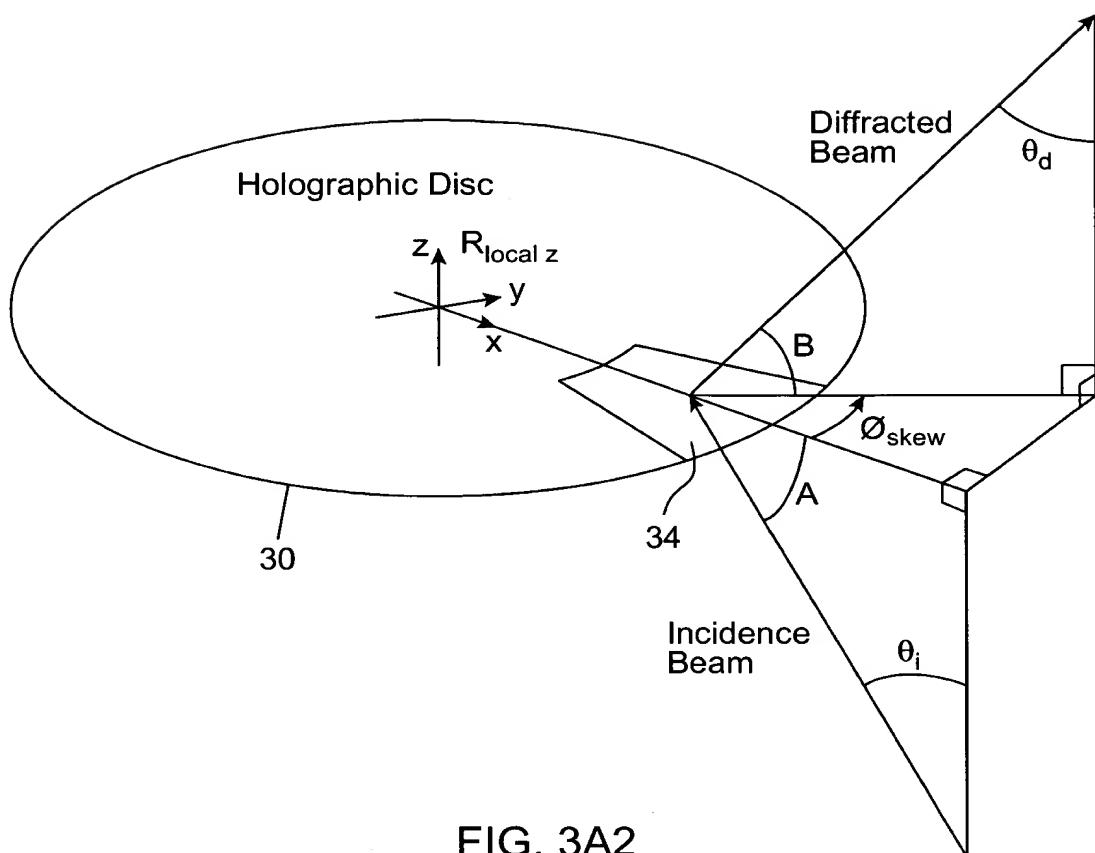


FIG. 3A2

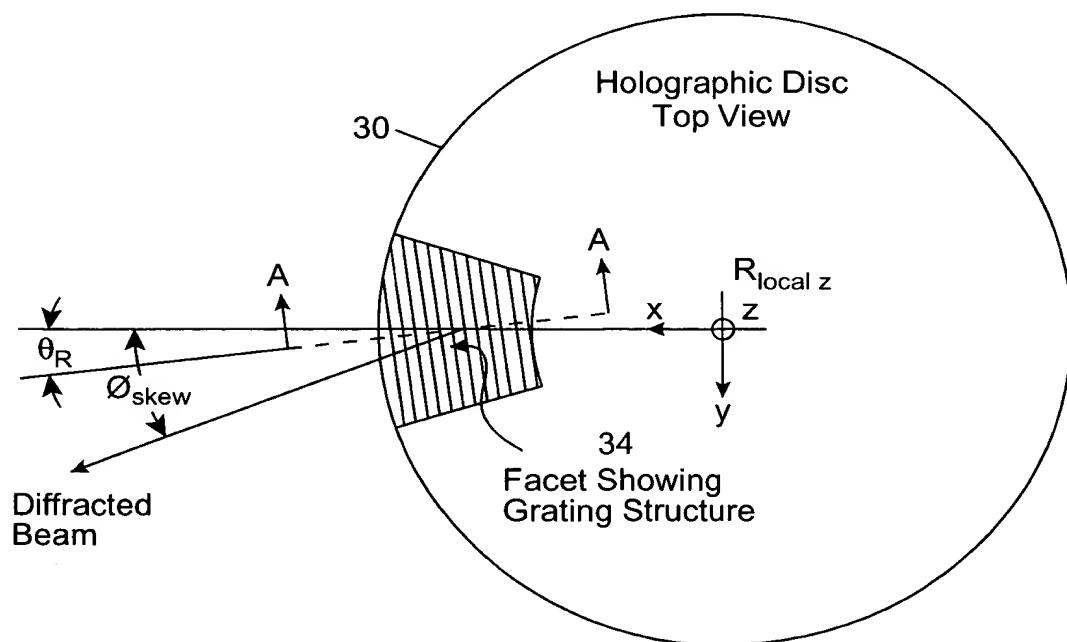
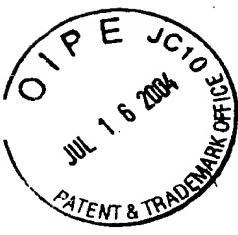


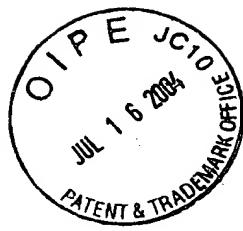
FIG. 3A3



ELEVATION AND SKEW ANGLE CHARACTERISTICS OF FACETS ON  
HOLOGRAPHIC SCANNING DISK OF THE PRESENT INVENTION

FACET GROUP NO.	G1	HIGH ELEVATION ANGLE LEFT SKEW ANGLE	FACET NO.
			7
			9
			11
G2	G2	HIGH ELEVATION ANGLE RIGHT SKEW ANGLE	FACET NO.
			8
			10
G3	G3	LOW ELEVATION ANGLE NO/ZERO SKEW ANGLE	FACET NO.
			1
			2
			3
			4
			5
			6

FIG. 3A4



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Station 1 (Local Co-ordinates)				Positive Skew (Left)				No Skew (Zero)				MG3@ST1			
2	Negative skew (Right)				x	y	z	x	y	z	x	y	z	x	y	z
3	First Mirror	x	y	z												
4		2.55	-1.80	2.70		3.80	2.30	2.77		4.30	1.60	2.52				
5		4.15	-2.27	2.77		4.10	1.88	2.40		4.95	2.15	2.04				
6	M <sub>1,2,1</sub>	3.95	0.23	2.05	M <sub>1,1,1</sub>	3.80	0.14	1.80	M <sub>1,3,1</sub>	5.20	2.00	1.83				
7	.	2.42	-0.24	2.25		3.10	-0.80	1.80		5.00	-1.80	1.66				
8		2.55	-1.80	2.70		2.50	-0.16	2.45		4.70	-2.10	1.87				
9						2.65	0.76	2.77		4.10	-1.60	2.40				
10						3.80	2.30	2.77		4.30	1.60	2.52				
11																
12	Second Mirror	x	y	z	x	y	z	x	y	z	x	y	z	x	y	z
13		4.00	-2.63	0.05		1.70	4.10	1.30		3.10	2.60	-0.03				
14		4.90	-1.40	0.77		3.00	4.45	1.98		4.50	3.00	0.22				
15	M <sub>1,2,2</sub>	4.60	-3.20	2.18	M <sub>1,1,2</sub>	3.40	3.99	1.50	M <sub>1,3,2</sub>	4.35	-2.30	0.30				
16		3.70	-4.10	1.06		2.30	2.43	-0.63		3.00	-2.00	0.04				
17		4.00	-2.63	0.05		1.40	2.57	-0.63		3.10	2.60	-0.03				
18						1.00	2.99	-0.20								
19						1.70	4.10	1.30								
20																
21	Third Mirror	x	y	z												
22		4.41	-4.10	1.10												
23		1.97	-3.30	2.20												
24	M <sub>1,2,3</sub>	1.12	-1.60	0.80												
25		2.51	-2.00	0.10												
26		3.53	-2.70	0.10												
27		4.41	-4.10	1.10												
28																

FIG. 3B

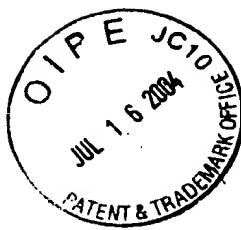


MG3@ST2

Split mirror for generating two sets of horizontal lines

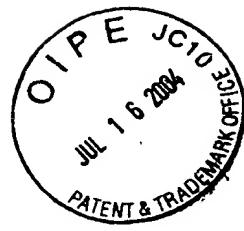
M3328

**FIG. 3C**



	A	B	C	D	E	F	G	H	I	J	K	L
54	Station 3 (Local Co-ordinates)											
55	(R) Negative skew											
56	First Mirror											
57	x	y	z	x	y	z	(L) Positive Skew	x	y	z	No Skew	
58	3.80	-2.30	2.77	2.55	1.80	2.70		4.30	-1.60	2.52		
59	4.10	-1.88	2.40	4.15	2.27	2.77		4.95	-2.15	2.04		
M <sub>3,2,1</sub>	3.80	-0.14	1.80	M <sub>3,1,1</sub>	3.95	-0.23	2.05	5.20	-2.00	1.83		
60	3.10	0.80	1.80	2.42	0.24	2.25		5.00	1.80	1.66		
61	2.50	0.16	2.45	2.55	1.80	2.70		4.70	2.10	1.87		
62	2.65	-0.76	2.77					4.10	1.60	2.40		
63	3.80	-2.30	2.77					4.30	-1.60	2.52		
64												
65	Second Mirror	x	y	z	x	y	z	x	y	z		
66	1.70	-4.10	1.30	4.00	2.63	0.05		3.10	-2.60	-0.03		
67	3.00	-4.45	1.98	4.90	1.40	0.77		4.50	-3.00	0.22		
68	3.40	-3.99	1.50	4.60	3.20	2.18		4.35	2.30	0.30		
M <sub>3,2,2</sub>	2.30	-2.43	-0.63	M <sub>3,1,2</sub>	3.70	4.10	1.06	3.00	2.00	0.04		
70	1.40	-2.57	-0.63	4.00	2.63	0.05		3.10	-2.60	-0.03		
71	1.00	-2.99	-0.20									
72	1.70	-4.10	1.30									
73												
74	Third Mirror	x	y	z	x	y	z					
75					4.41	4.10	1.10					
76					1.97	3.30	2.20					
77					M <sub>3,1,3</sub>	1.12	1.60	0.80				
78						2.51	2.00	0.10				
79						3.53	2.70	0.10				
80						4.41	4.10	1.10				
81												

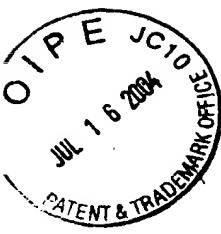
FIG. 3D



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
<b>Station 4</b> (Local Co-ordinates)																
84 Negative skew																
85 First Mirror																
86	4.90	-0.80	6.41		4.90	0.80	6.41		6.70	0.00	5.61		6.70	0.00	5.61	
87	6.10	-0.80	5.65		6.10	0.80	5.65		7.40	0.00	3.32		7.40	0.00	3.32	
88 M4,2,1	6.00	-4.50	6.47 M4,1,1		6.00	4.50	6.47 M4,3,1A		6.95	-3.00	2.90		6.95	3.00	2.90	
89	4.90	-4.50	7.17		4.90	4.50	7.17		6.20	-3.00	5.34		6.20	3.00	5.34	
90	4.90	-0.80	6.41		4.90	0.80	6.41		6.70	0.00	5.61		6.70	0.00	5.61	
91																
92																
93																
94 Second Mirror		x	y	z		x	y	z		x	y	z		x	y	z
95	2.85	-3.20	3.37		2.85	3.20	3.37									
96	4.20	-2.80	3.23		4.20	2.80	3.23									
97 M4,2,2	5.95	-4.50	6.46 M4,1,2		5.95	4.50	6.46									
98	4.60	-4.95	6.68		4.60	4.95	6.68									
99	2.85	-3.20	3.37		2.85	3.20	3.37									
100																

(Split mirror for generating two sets of horizontal lines)

FIG. 3E



	A	B	C	D	E	F	G	H	I	J	K
967 *** Table of Major Dependent Parameters for both the Scanner and the Disk ***											
968											
969 <b>Box height (inches):</b>							N/A	(See Note 1)			
970 <b>Box width (inches):</b>							N/A	(See Note 2)			
971 <b>Max angle B (degrees):</b>							62.00	(See Note 3)			
972 <b>Min angle B (degrees):</b>							38.00	(See Note 3)			
973 <b>Total facet angular sweep (degrees):</b>							358.14	(See Note 4)			
974											
975 <b>Min (angle A - angle B) (degrees):</b>							0.00	(See Note 6)			
976 <b>Max beam speed (inches per second):</b>							13704				
977 <b>Min beam speed (inches per second):</b>							7158				
978 <b>Power at data detector (nW):</b>							872				
979 <b>Signal voltage (volts):</b>							5.47	(See Note 7)			
980 <b>Signal voltage at max DOF limits (volts):</b>							3.45	(See Note 7)	<b>0.91</b>	<b>Max bandwidth (MHz) for</b>	<b>7.5 mil bars</b>
981 <b>CDRH:</b>	P-avg. Class 2?	Class 2A?	P-pulse Class 1?								
982	YES	YES	YES								
983											
984 <b>IEC:</b>	<b>Single pulse</b>	<b>P-avg. 0.25s</b>	<b>Pulse train correction</b>								
985	PASS	PASS	PASS								
986											
987											

FIG. 3F1



	A	B	C	D	E	F	G	H	I	J	K
988	<b>Note 1:</b> If this entry is highlighted (red) then the value exceeds the specified value for										
989	the box height (Cell G21). Go to cells G417 to G456 to identify the problem entries										
990	and make the necessary inner radius adjustments in Cells G215 to G254.										
991											
992	<b>Note 2:</b> This entry is not used in the box design, but it gives an indication of the box										
993	dimensions that would be established by the width of the tops of the mirrors.										
994											
995	<b>Note 3:</b> Generally, the B angles should range between 40 degrees and 70 degrees.										
996	Holograms with smaller or larger angles may be difficult to construct.										
997											
998	<b>Note 4:</b> This entry must be less than, but within a few degrees of, 360 degrees.										
999	To satisfy this requirement, it may be necessary to make adjustments										
1000	to the focal distances and/or the length of the scan lines.										
1001											
1002											
1003											
1004											
1005											
1006	<b>Note 6:</b> This value must be greater than 0.5 degrees to avoid feedback into the										
1007	laser from disk surface reflections. If it is too small, adjustments must be										
1008	made to the B angles of the problem facets (See Cells X468 to X507).										
1009											
1010	<b>Note 7:</b> The signal voltage must be greater than some value established by the signal										
1011	processor requirements. Typically, this value should be greater than 2 volts.										
1012	If this value is less than 2 volts, either the laser power must be increased or										
1013	the focal distances must be decreased.										
1014											
1015	<b>Note 8:</b> All CDRH/IEC entries must be YES or PASS. If not, laser power must be reduced.										
1016	(Modify laser power in Cell B799.)										

FIG. 3F2



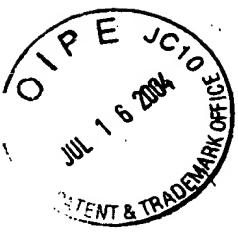
	A	B	C	D	E	F
457						
458	d = distance from disk to base of scanner (inches):					
459						
460	Rotational speed of disk (rpm)					
461						
462	DiskStratos_4.xls					
463						
464	Diffraction	Geometrical				
465	Facet	Focal length	Angle A	Angle B	Angle of	
466	(inches)	(inches)	(degrees)	(degrees)	Diffraction	
467	Given		Given	Given	(degrees)	
468	1	12.5	12.68	52	38.00	52.00
469	2	11.5	11.64	52	40.00	50.00
470	3	12.7	12.88	52	42.00	48.00
471	4	11.5	11.64	52	44.00	46.00
472	5	12.7	12.88	52	48.00	42.00
473	6	12.0	12.15	52	52.00	38.00
474	7	14.7	14.99	52	58.00	32.00
475	8	14.7	14.99	52	58.00	32.00
476	9	13.5	13.72	52	60.00	30.00
477	10	13.5	13.72	52	60.00	30.00
478	11	14.8	15.09	52	62.00	28.00
479	12	14.8	15.09	52	62.00	28.00

FIG. 3G1A



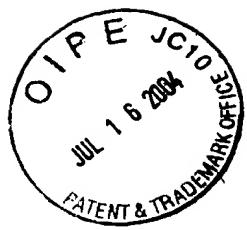
	G	H	I	J	K	L	M
457							
458	0						
459							
460	5200						
461							
462	650 nm						
463	Focal plane	359.13					
464	scan line	Scan mult.	Rotation		Light Collection		
465	length	Scan Angle	Factor (m)	Angle	Factor		
466	(inches)	(degrees)	(degrees)	(degrees)	(degrees)	(sq. in.)	
467							
468	9.750	42.61	1.62	26.24	27.47	1.00	2.28
469	9.750	45.95	1.62	28.35	29.58	0.80	1.81
470	9.750	42.00	1.58	26.66	27.89	0.92	2.09
471	9.750	45.95	1.57	29.19	30.42	0.71	1.62
472	9.750	42.00	1.50	27.97	29.21	0.79	1.79
473	9.750	44.22	1.46	30.28	31.51	0.64	1.47
474	9.750	36.69	1.31	27.99	29.23	0.87	1.97
475	9.750	36.69	1.31	27.99	29.23	0.87	1.97
476	9.750	39.71	1.30	30.65	31.88	0.71	1.61
477	9.750	39.71	1.30	30.65	31.88	0.71	1.61
478	9.750	36.46	1.25	29.19	30.42	0.83	1.88
479	9.750	36.46	1.25	29.19	30.42	0.83	1.88

FIG. 3G1B



	N	O	P	Q	R	S	T	U
457	Notch size in mirror							
458	TG (12/21/99)							
459	3.5 mm x 5.1 m (3.5 mm x 6.5 mm at disk)							
460	Design							
461	Collection							
462	Area	Beam speed	Beam speed	Beam				
463	(Includes	at center of	at max depth	at min depth	skew	Facet count		
464	notch loss of	scan line	of field	of field	angle	function	Number of	
465	0.035					1 = facet	facets	
466	sq. inches)	(inches/sec)	(inches/sec)	(inches/sec)	(degrees)	0 =no facet	12	
467								Max freq.
468	2.27	11052	13704	8400	0	1	0.914	0.560
469	1.81	10150	12798	7502	0	1	0.853	0.500
470	2.08	10895	13468	8321	0	1	0.898	0.555
471	1.63	9858	12429	7286	0	1	0.829	0.486
472	1.79	10383	12835	7930	0	1	0.856	0.529
473	1.47	9544	11929	7158	0	1	0.795	0.477
474	1.97	10492	12634	8351	28	1	0.842	0.557
475	1.97	10492	12634	8351	-28	1	0.842	0.557
476	1.62	9524	11640	7407	28	1	0.776	0.494
477	1.62	9524	11640	7407	-28	1	0.776	0.494
478	1.88	10068	12108	8027	28	1	0.807	0.535
479	1.88	10068	12108	8027	-28	1	0.807	0.535

FIG. 3G2A



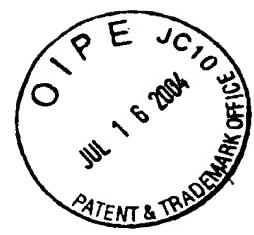
	V	W	X	Y	Z	AA	AB
457							
458							
459	<b>NOTE: if any entry in these two columns is less than 0.5 degrees (highlighted in red), the corresponding B angle should be changed.</b>						
460							
461	<b>This is accomplished by modifying the "Distance from rotational axis" entry for that line (cells G46 to G85).</b>						
463							
464			<b>Angle A - Angle B (Absolute value)</b>				
465							
466							
467	Bandwidth						
468	0.354				14.00		
469	0.353				12.00		
470	0.343				10.00		
471	0.343				8.00		
472	0.327				4.00		
473	0.318				0.00		
474	0.286				6.00		
475	0.286				6.00		
476	0.282				8.00		
477	0.282				8.00		
478	0.272				10.00		
479	0.272				10.00		

FIG. 3G2B



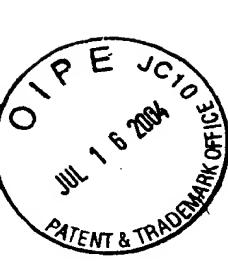
	A	B	C	D	E
508	Avg. f.l. (in.)	13.46	Average angle B (degrees):	52.00	
509	Avg waist loc	13.24	Maximum angle B (degrees):	62.00	
510	Approximate minimum box width:	N/A		inches	
511	(Based on large mirror as limitation)				
512					
513					
514					
515	*** Master Hologram Exposure Information ***				
516	DiskStratos_4.xls				
517	Gelatin Refractive Indexes				
518	Before processing:	1.53	Wavelengths (microns)	0.65	
519	After processing:	1.4	Scanner:	0.488	
520			Exposure:		
521	Facet				
522		Grating spacing at scan region (microns)			
523		Design wavelength =	0.65 microns		
524	1	0.4631			
525	2	0.4704			
526	3	0.4784			
527	4	0.4869			
528	5	0.5059			
529	6	0.5279			
530	7	0.5674			
531	8	0.5674			
532	9	0.5826			
533	10	0.5826			
534	11	0.5990			
535	12	0.5990			

FIG. 3H1



F	G	H	I	J	K	L
508	Average:	1.42				
509	SUMS ---->	488.46		344.36	359.13	9.65
510						
511	Total facet angular sweep (degrees):			359.13		
512						
513						
514						
515						
516	650 nm					
517						
518	Distance from beam incidence point on disk to 488 nm reference point:					
519	Diffraction	Diffraction				
520	angle from	angle from				
521	Facet	annulus	reference point	Reference	Exposure angles at reference point at 488 nm	
522		(degrees)	Beam	Object		
523			(degrees)	Beam		
524	1	52.00	52.00	25.13	38.99	
525	2	50.00	50.00	25.45	37.42	
526	3	48.00	48.00	25.78	35.82	
527	4	46.00	46.00	26.12	34.20	
528	5	42.00	42.00	26.81	30.90	
529	6	38.00	38.00	27.53	27.53	
530	7	32.00	32.00	28.64	22.38	
531	8	32.00	32.00	28.64	22.38	
532	9	30.00	30.00	29.02	20.64	
533	10	30.00	30.00	29.02	20.64	
534	11	28.00	28.00	29.40	18.89	
535	12	28.00	28.00	29.40	18.89	

FIG. 3H2



	M	N	O	P	Q	R	S	T	U	V
508										
509	<b>21.99</b>	<b>21.99</b>								
510	<b>Vmax (in/s):</b>	<b>13704</b>	<-----SUMS							
511	<b>Vmin (in/s):</b>	<b>7158</b>								
512	<b>Ratio</b>	<b>1.91</b>								
513										
514										
515										
516										
517										
518	<b>0</b>	<b>inch</b>								
519										
520										
521	<b>alpha-1</b>	<b>beta-1</b>								
522	(degrees)	(degrees)	<b>phi</b>	<b>theta-1</b>	<b>L</b>	<b>theta-2</b>	<b>alpha-2</b>	<b>beta-2</b>		
523			(degrees)	(degrees)	(microns)	(degrees)	(degrees)	(degrees)		
524	26.09	34.25	85.92	30.17	0.46	20.20	16.12	24.28		
525	26.09	33.17	86.46	29.63	0.47	19.86	16.31	23.40		
526	26.09	32.06	87.01	29.07	0.48	19.50	16.52	22.49		
527	26.09	30.92	87.59	28.50	0.49	19.14	16.72	21.55		
528	26.09	28.55	88.77	27.32	0.51	18.38	17.15	19.61		
529	26.09	26.09	90.00	26.09	0.53	17.58	17.58	17.58		
530	26.09	22.24	91.92	24.17	0.57	16.33	18.26	14.41		
531	26.09	22.24	91.92	24.17	0.57	16.33	18.26	14.41		
532	26.09	20.92	92.58	23.51	0.58	15.90	18.48	13.32		
533	26.09	20.92	92.58	23.51	0.58	15.90	18.48	13.32		
534	26.09	19.59	93.25	22.84	0.60	15.47	18.71	12.22		
535	26.09	19.59	93.25	22.84	0.60	15.47	18.71	12.22		

FIG. 3H3



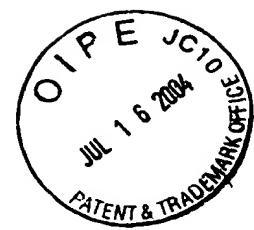
	A	B	C	D	E	F	G	H
566	*** Modified Exposure Angles to Correct for Post-processing Residual Gelatin Swell ***							
567	DiskStratos_4.xls							
568	Percent gelatin swell (from measurements) delta-t/t:							
569	20%							
570	Exposure angles at 488 nm							
571	Reference	Object	Beam	Reference	Object	Beam	gamma(sw)	
572	Facet	Beam	Beam	Facet	Beam	Beam		
573	(degrees)	(degrees)	(degrees)	(degrees)	(degrees)	(degrees)		
574								
575	1	25.13	38.99	23.85	40.50		-4.08	
576	2	25.45	37.42	24.34	38.70		-3.54	
577	3	25.78	35.82	24.83	36.88		-2.99	
578	4	26.12	34.20	25.35	35.04		-2.41	
579	5	26.81	30.90	26.41	31.31		-1.23	
580	6	27.53	27.53	27.53	27.53		0.00	
581	7	28.64	22.38	29.28	21.77		1.92	
582	8	28.64	22.38	29.28	21.77		1.92	
583	9	29.02	20.64	29.89	19.83		2.58	
584	10	29.02	20.64	29.89	19.83		2.58	
585	11	29.40	18.89	30.50	17.89		3.25	
586	12	29.40	18.89	30.50	17.89		3.25	

FIG. 3I1



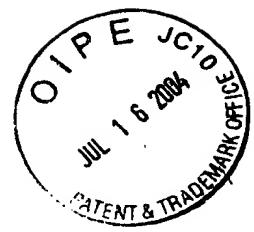
	I	J	K	L	M	N	O
566							
567							
568							
569							
570							
571 gamma(0)	A	B	C	Z	alpha-0	beta-0	
572							
573							
574							
575	-4.90	1.99	0.17	0.69	0.26	15.33	25.12
576	-4.25	1.99	0.15	0.68	0.27	15.62	24.12
577	-3.58	1.99	0.12	0.67	0.27	15.93	23.10
578	-2.90	1.99	0.10	0.66	0.28	16.25	22.04
579	-1.48	2.00	0.05	0.63	0.29	16.90	19.86
580	0.00	2.00	0.00	0.60	0.30	17.58	17.58
581	2.31	2.00	-0.08	0.56	0.32	18.65	14.03
582	2.31	2.00	-0.08	0.56	0.32	18.65	14.03
583	3.10	1.99	-0.11	0.55	0.33	19.01	12.81
584	3.10	1.99	-0.11	0.55	0.33	19.01	12.81
585	3.90	1.99	-0.14	0.53	0.33	19.37	11.58
586	3.90	1.99	-0.14	0.53	0.33	19.37	11.58

FIG. 312



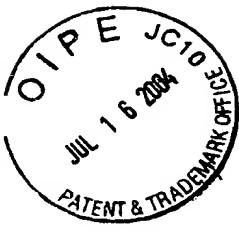
	A	B	C	D	E	F	G	H
617	<b>*** Analysis of the Focus Shift and Out-of-focus Spot Size for Converging Reference Beam ***</b>							
618	(Not applicable for Stratos)							
619	<b>Convergence of the reference beam:</b>							
620	<b>Focal length of parabolic mirror:</b>							
621	<b>Distance from parabolic mirror to detector:</b>							
622	Design	Par. Mirror	Required	Object	Image	Image	<b>Spot size</b>	
623	Facet	Focal length	Eff. width	foc. length	distance	shift	at detector	
624		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	
625								
626								
627	1	311.50	40	404.42	-14858.75	59.05	-0.95	0.64
628	2	292.10	40	364.09	31841.43	58.71	-1.29	0.88
629	3	322.58	40	412.69	-11828.19	59.11	-0.89	0.60
630	4	292.10	40	364.09	31841.43	58.71	-1.29	0.88
631	5	322.58	40	412.69	-11828.19	59.11	-0.89	0.60
632	6	304.80	40	384.03	-48230.76	58.89	-1.11	0.75
633	7	373.38	40	499.67	-4485.04	59.60	-0.40	0.27
634	8	373.38	40	499.67	-4485.04	59.60	-0.40	0.27
635	9	342.90	40	446.55	-6818.26	59.33	-0.67	0.45
636	10	342.90	40	446.55	-6818.26	59.33	-0.67	0.45
637	11	375.92	40	504.23	-4375.15	59.62	-0.38	0.25
638	12	375.92	40	504.23	-4375.15	59.62	-0.38	0.25

FIG. 3J1



	I	J	K	L	M
617					
618					
619					
620					
621					
622					
623					
624					
625	0.88				
626					
627	Distance (Cell E621) may have to be adjusted				
628	so that the maximum spot size at the detector is				
629	approximately the same when the 1/2 depth of field value				
630	is negative as it is when the 1/2 depth of field value is positive.				
631	(The 1/2 depth of field value is located at Cell G19)				
632					
633					
634					
635					
636					
637					
638					

FIG. 3J2



Focal distances and distances to the window for the Stratos scanner  
LDD 12/7/99 RPH

Facet Given	Diffraction Focal length (inches)	Distance to horizontal window (inches)	Difference (inches)	Distance to vertical window (inches)	Difference (inches)	Operator side	
						Distance to horizontal window (inches)	Difference (inches)
1	12.5	8.5	4	10.2	2.3	8	4.5
2	11.5	8.8	2.7	10.2	1.3	8.42	3.08
3	12.7	9.2	3.5	10.2	2.5	8.85	3.85
4	11.5	9.5	2	10.2	1.3	9.25	2.25
5	12.7	9.8	2.9	10.2	2.5	9.7	3
6	12	10.2	1.8	10.2	1.8	10.1	1.9
7	14.7	10.6	4.1	14.1	0.6		
8	14.7	9.7	5	14.1	0.6		
9	13.5	11.2	2.3	13.8	-0.3		
10	13.5	9.8	3.7	13.8	-0.3		
11	14.8	11.1	3.7	13.6	1.2		
12	14.8	9.6	5.2	13.6	1.2		

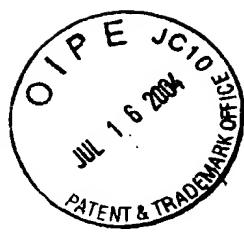
The horizontal window lines from the even numbered vertical facets 8, 10, 12 are near the vertical window.

FIG. 3K



	A	B	C	D	E	F	G	H	I
1 ** CDRH/IEC Calculations to Verify that the Scanner Meets the Laser Class Requirements ***									
2									
3	The number of overlapping lines (N-overlap) must be determined from the scanner data.								
4	A safe assumption for our scanners is to consider that two scan lines are overlapped								
5	ONLY when the difference between their diffraction angles (B) is less than 2 degrees.								
6	All else being equal, the slowest scan lines (largest angle B) will be the worst case scan lines.								
7									
8	N-overlap:	1							
9	Motor speed (rpm):			5200					
10	Alpha-min (radians):			0.0015 (from standard)					
11	FWHM P-divergence of laser (deg.):			8 (Linked from Trnc spreadsheet)					
12	FWHM S-divergence of laser (deg.):			30 (Linked from Trnc spreadsheet)					
13	Focal length of collimating lens (mm):			6.1 (Linked from Trnc spreadsheet)					
14	Angle of incidence at MF plate (deg.):			29.23					
15	Angle of diffraction at MF plate (deg.):			42.12					
16	X-p (mm):			0.87					
17	X-s (mm):			3.93					
18	Average source dimension (mm):			2.40					
19	Distance to aperture (mm):			200 (actual distance or 200 mm, whichever is greater)					
20	Alpha (radians):			0.012					
21	C6:			7.996					
22									

FIG. 3L1A



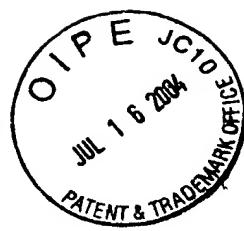
	A	B	C	D	E	F	G	H	I
23									
24	Laser power	tc (200)	ti (actual)						
25	at window	7 mm transit	7 mm transit	P x ti					
26	Facet (mW)	time at	time at	(Joules)					
27		d = 200 mm	actual d						
28			(seconds)	(seconds)					
29					Facet count				
30	1	0.86	3.95856E-05	3.95856E-05	0.0000339				1
31	2	0.86	3.96549E-05	3.96549E-05	0.0000341				1
32	3	0.86	4.08001E-05	4.08001E-05	0.0000351				1
33	4	0.86	4.08315E-05	4.08315E-05	0.0000352				1
34	5	0.86	4.28115E-05	4.28115E-05	0.0000370				1
35	6	0.87	4.40086E-05	4.40086E-05	0.0000381				1
36	7	0.87	4.90358E-05	4.90358E-05	0.0000425				1
37	8	0.87	4.90358E-05	4.90358E-05	0.0000425				1
38	9	0.87	4.96126E-05	4.96126E-05	0.0000430				1
39	10	0.87	4.96126E-05	4.96126E-05	0.0000430				1
40	11	0.87	5.14525E-05	5.14525E-05	0.0000446				1
41	12	0.87	5.14525E-05	5.14525E-05	0.0000446				1

FIG. 3L1B



	A	B	C	D	E	F	G	H
912 Sums:				0.0000515	0.0000446	These values are the sums of the worst case (largest) overlap values		
913								
914 Duty Cycle:	0.004459213							
915								
916 Paverage is the sum of the overlap Pi x ti products divided by the sum of the ti times the duty cycle								
917 Paverage is, therefore, the sum of the overlap Pi x ti products times the rps of the motor.								
918								
919 CDRH calculations and results								
920								
921								
922 Pavg. (mW):		0.003869			YES	YES		
923								
924 P (single pulse) (mW):		8.27						
925 (Maximum allowed)								
926								
927 P (single pulse)		0.87	YES					
928 (Actual)								
929								
930 IEC calculations and results								
931								
932 IEC condition A (Single pulse)					PASS/FAIL			
933								
934 P (single pulse) (mW):		70.6			PASS			
935 (Maximum allowed)								
936								

FIG. 3L2A



	A	B	C	D	E	F	G	H
937								
938	<b>IEC condition B (average power in a 0.25 second pulse train)</b>							
939								
940	<b>Pavg. allowed (mW):</b>	7.92					<b>PASS/FAIL</b>	
941								
942	<b>Pavg. scanner (mW):</b>	0.0039					<b>PASS</b>	
943								
944								
945	<b>IEC condition C (pulse train correction factor)</b>							
946	<b>(For this calculation, you need to insert the sum of the pulse times in the overlapping scan lines)</b>							
947								
948								
949	<b>T-total (seconds):</b>	0.000051						
950	<b>(sum of pulse times</b>							
951	<b>in overlap scan lines)</b>							
952								
953	<b>Pmax (mW):</b>	66.1						
954								
955	<b>Number of pulses in train:</b>	21.67						
956								
957	<b>Correction factor:</b>	0.4635						
958								
959	<b>Pmax (PT corrected)(mW):</b>	30.63					<b>PASS/FAIL</b>	
960								
961	<b>Pw (including overlap)</b>	0.87					<b>PASS</b>	
962								

FIG. 3L2B

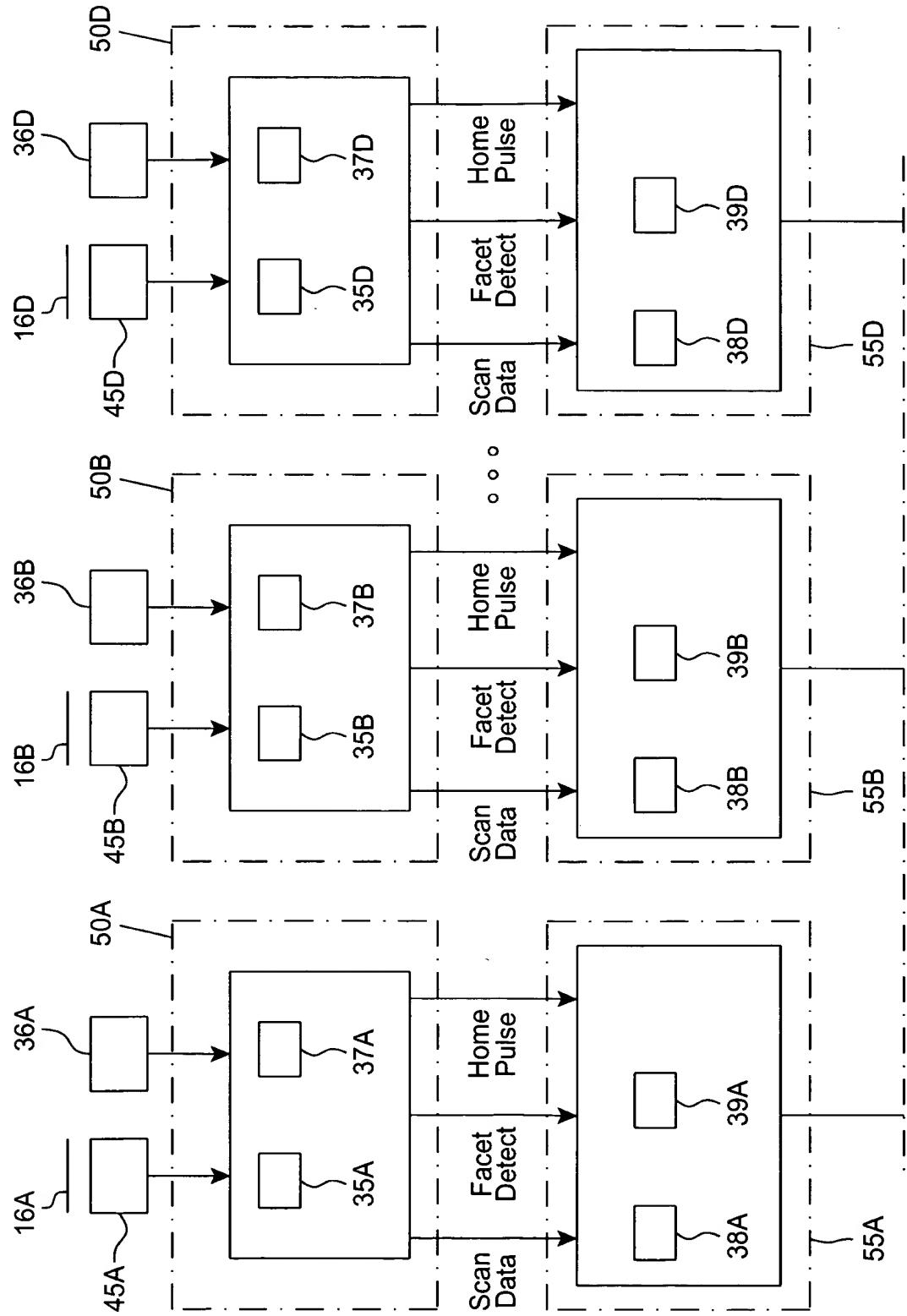


FIG. 4A

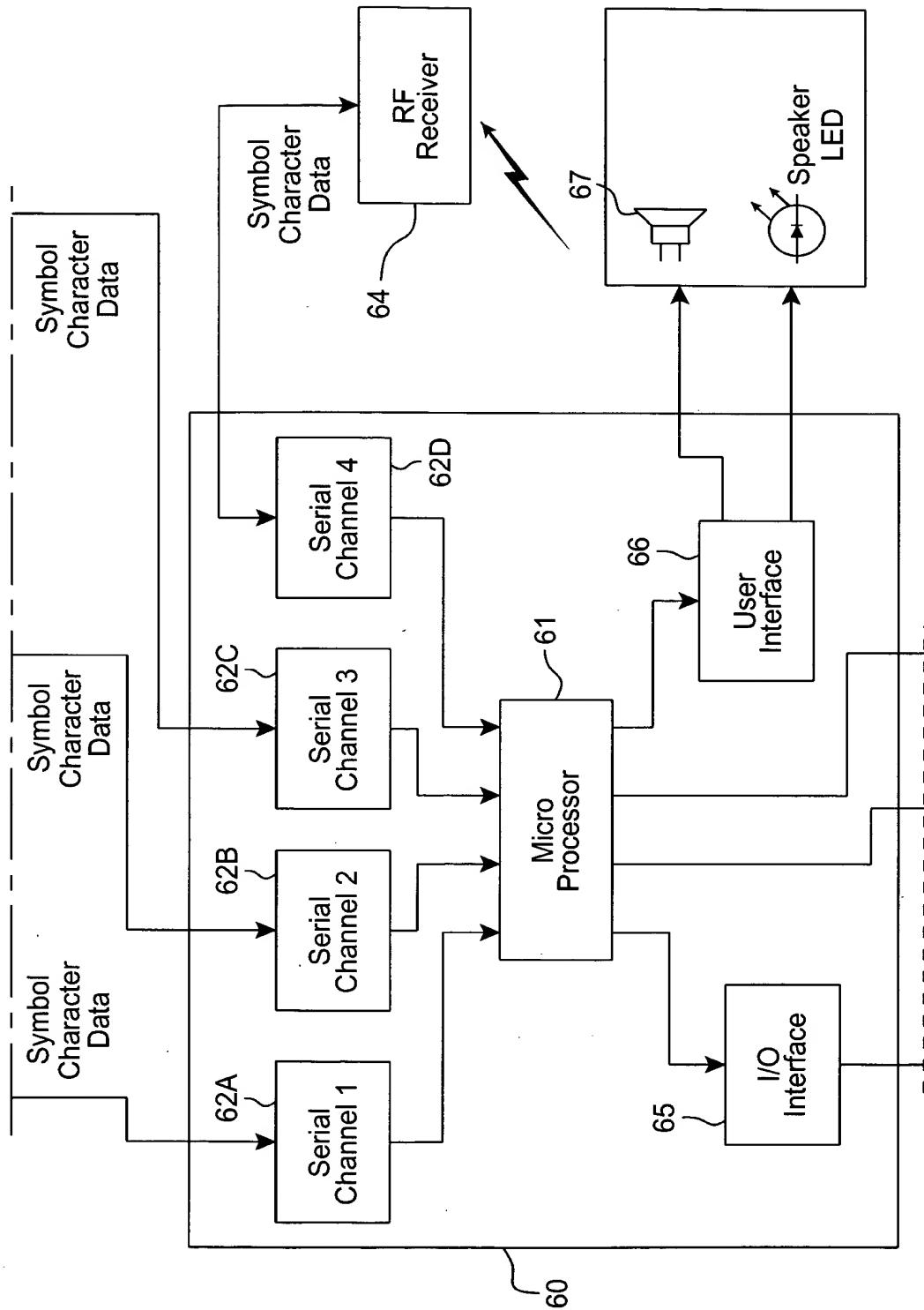
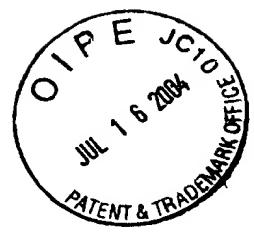


FIG. 4B

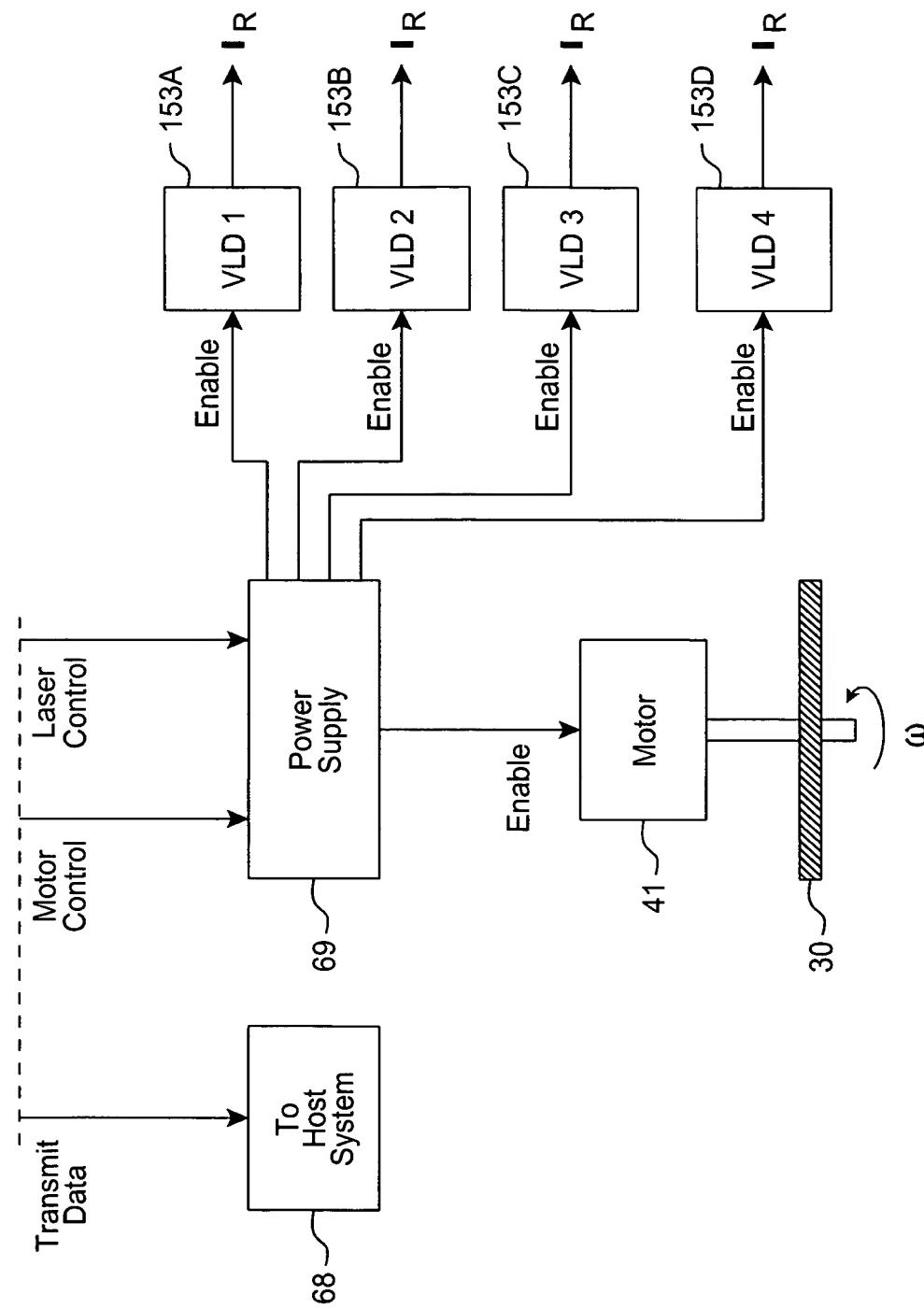
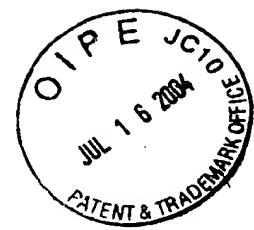


FIG. 4C

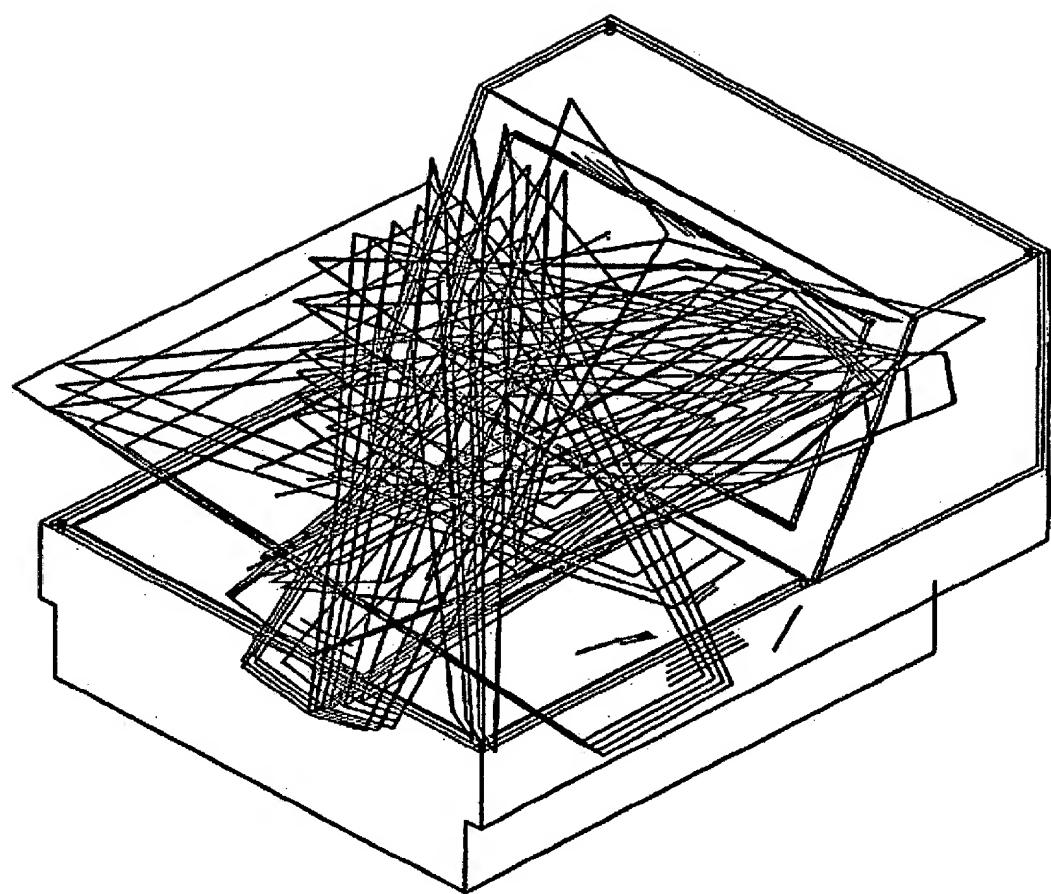
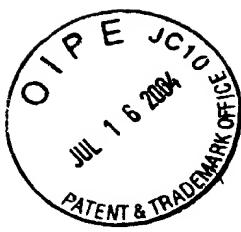


FIG. 5A1

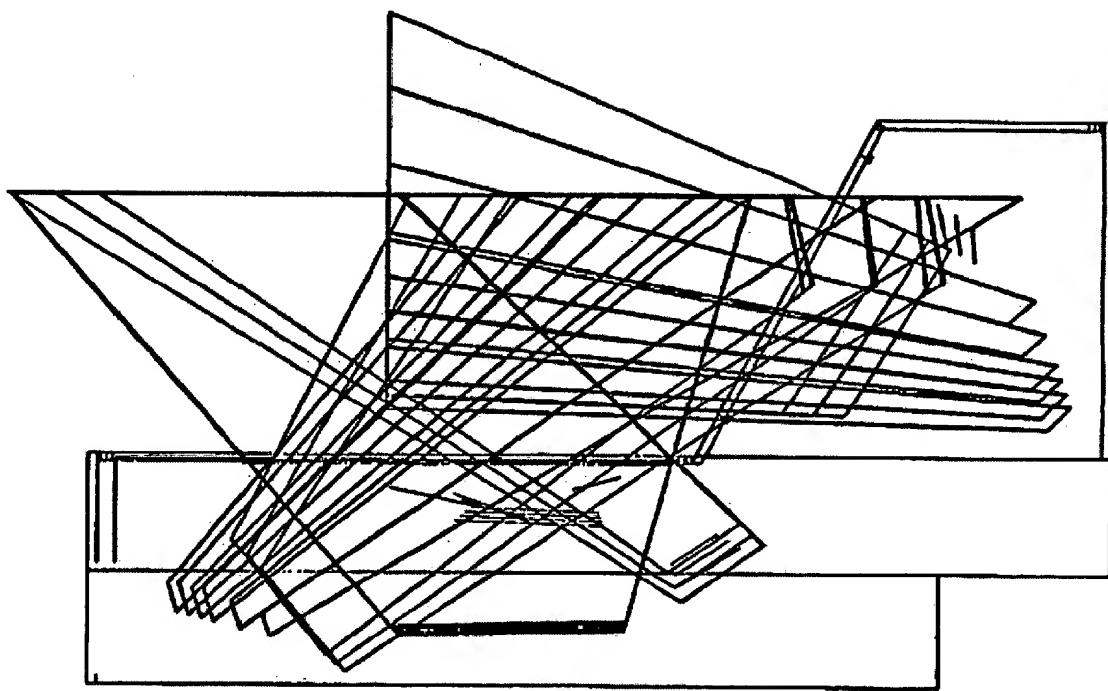


FIG. 5A2

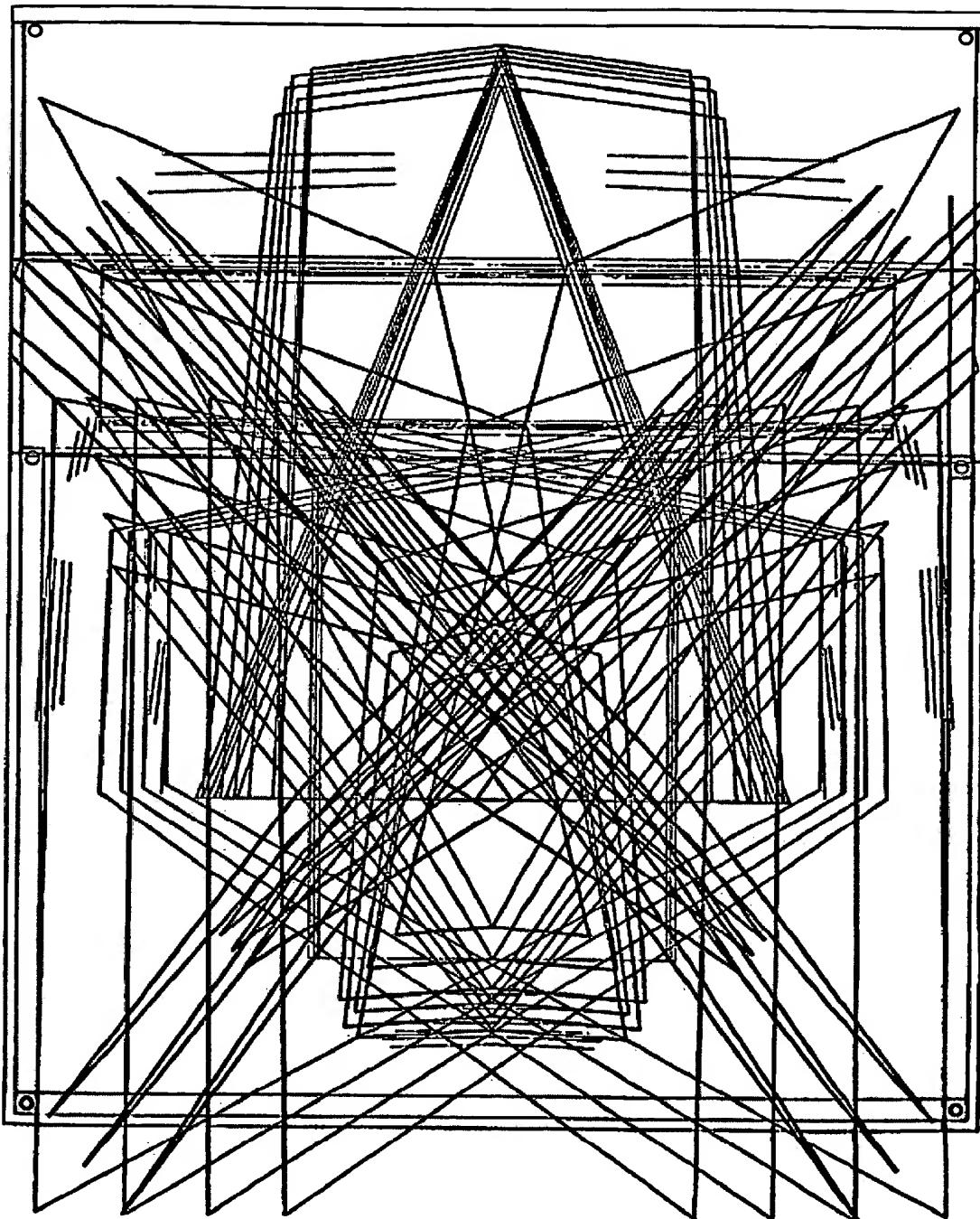


FIG. 5A3

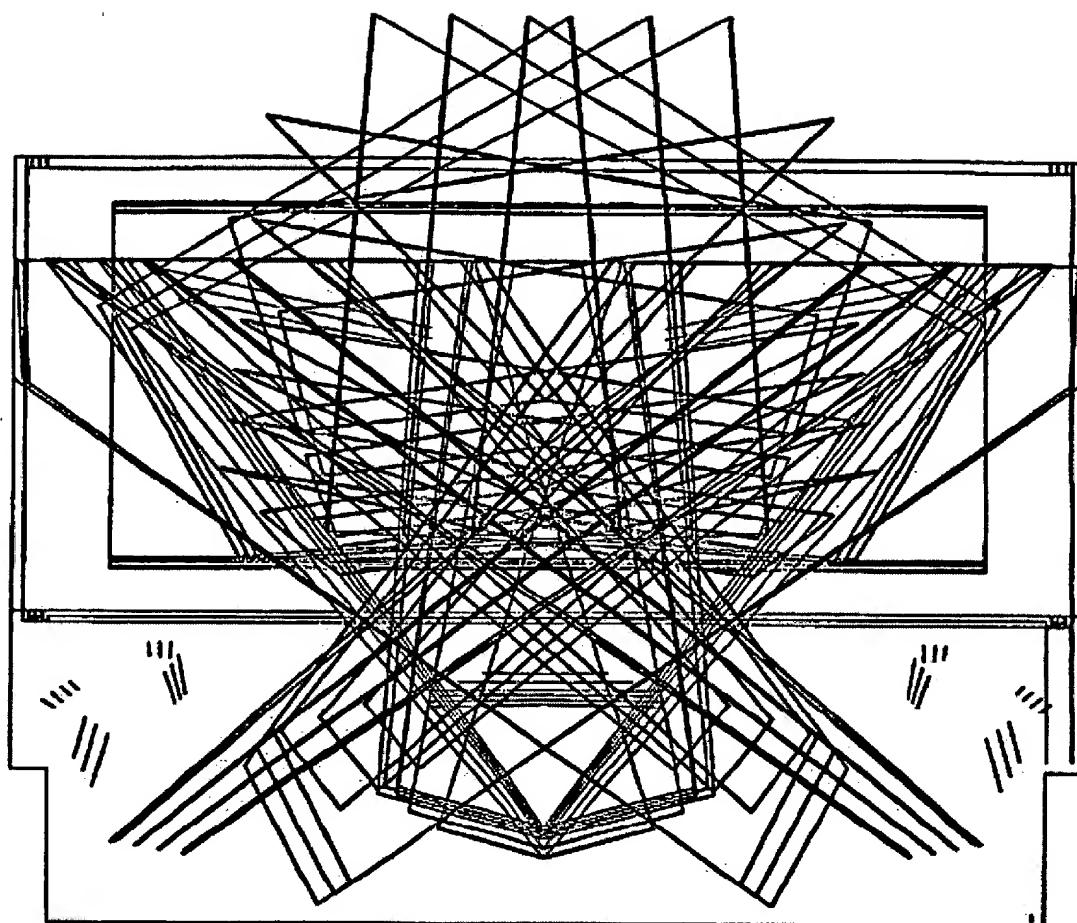
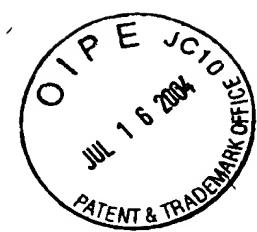


FIG. 5A4

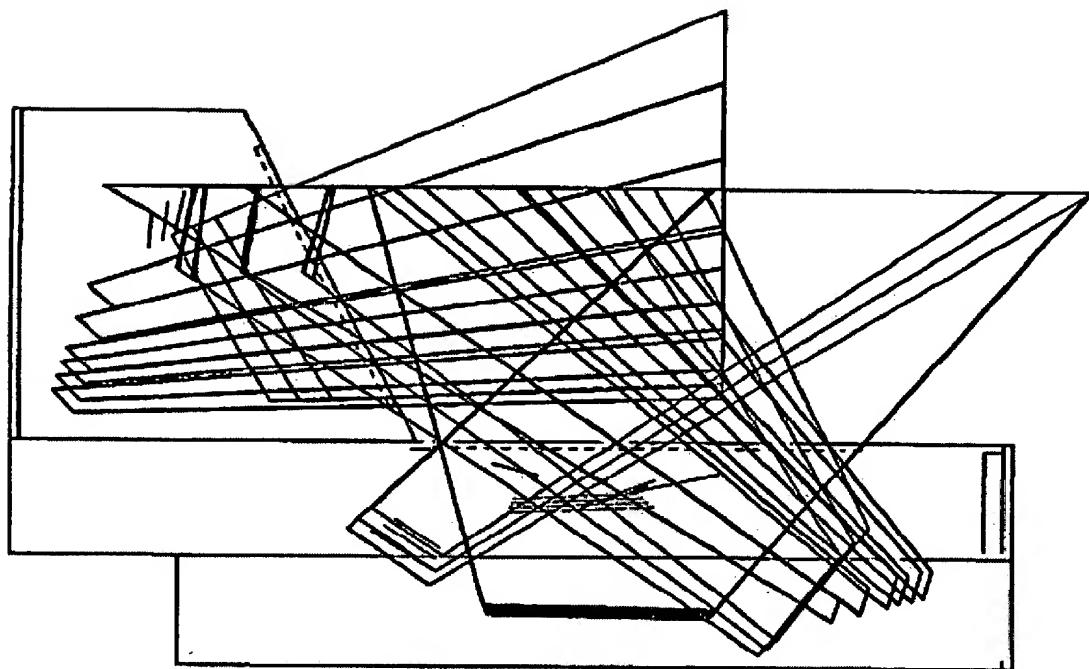
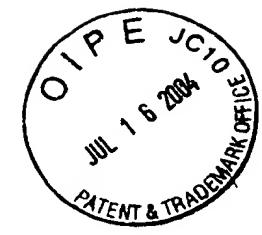


FIG. 5A5

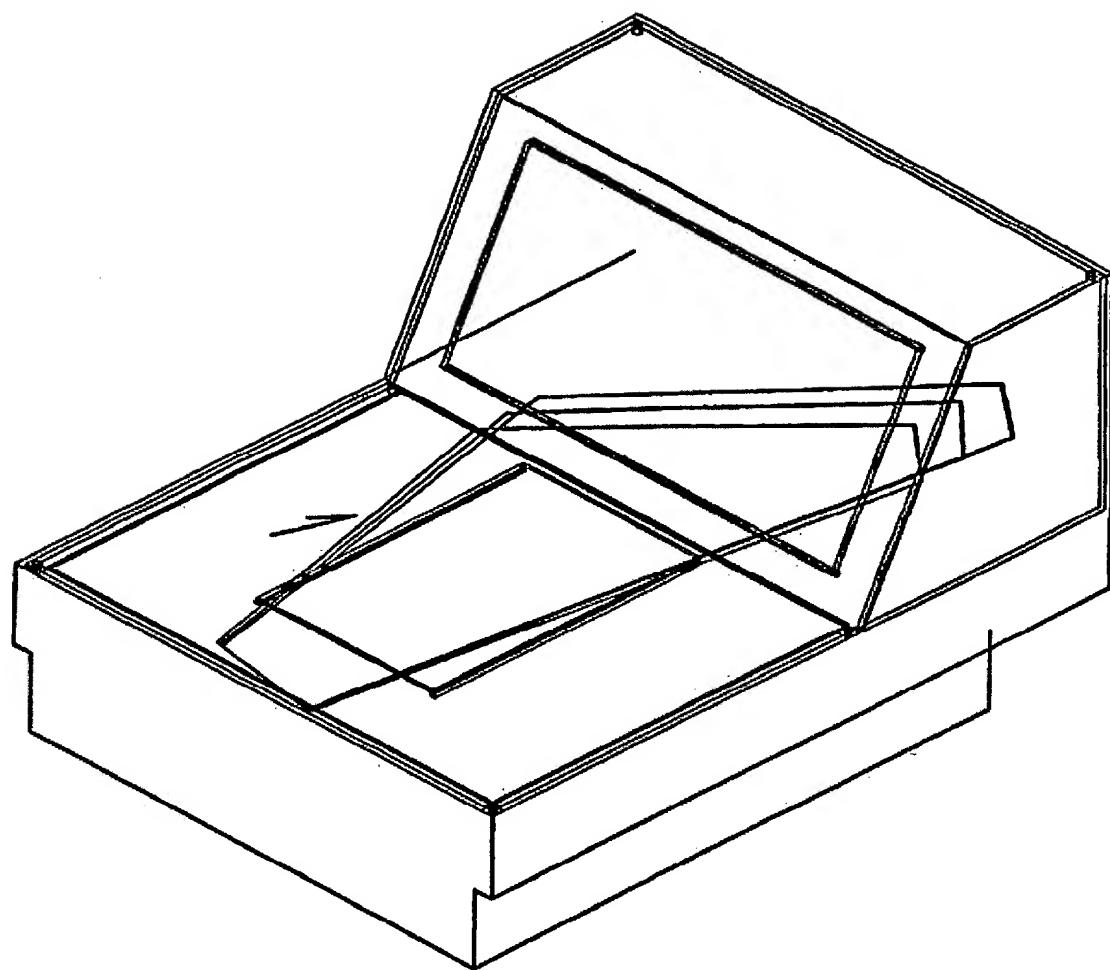


FIG. 5B1

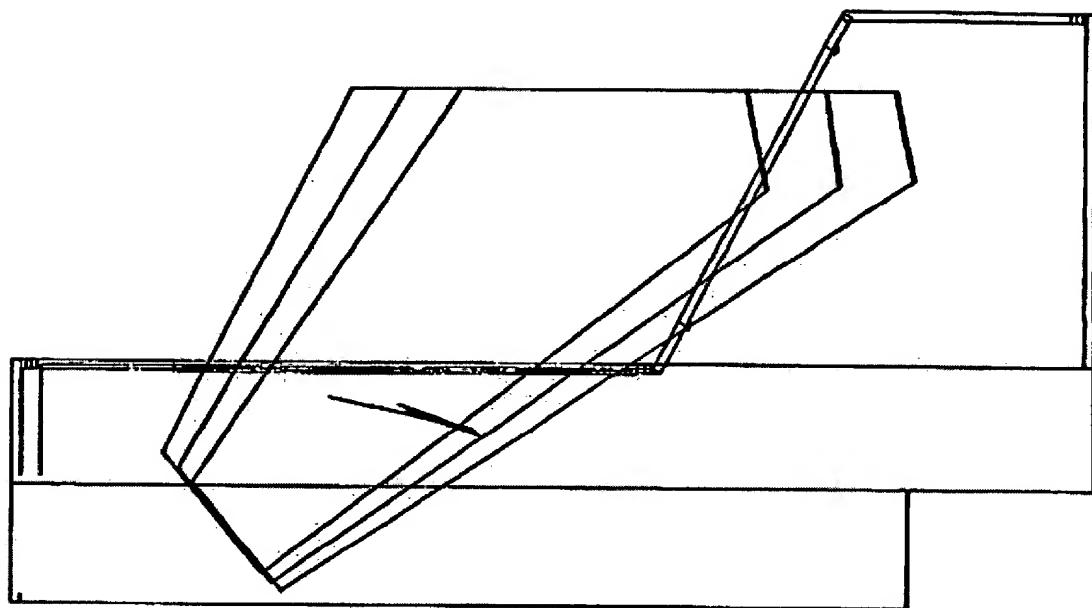


FIG. 5B2

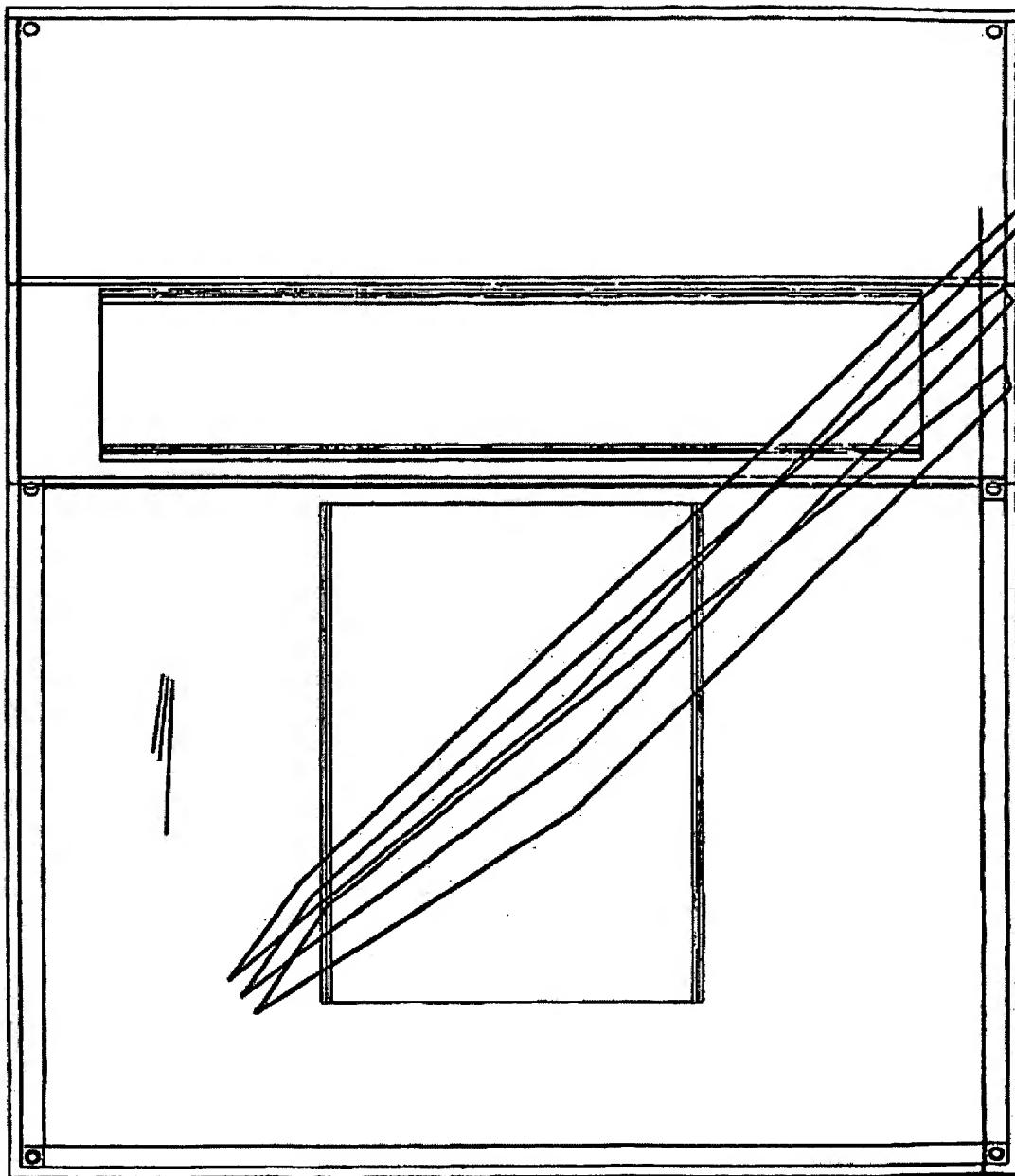


FIG. 5B3

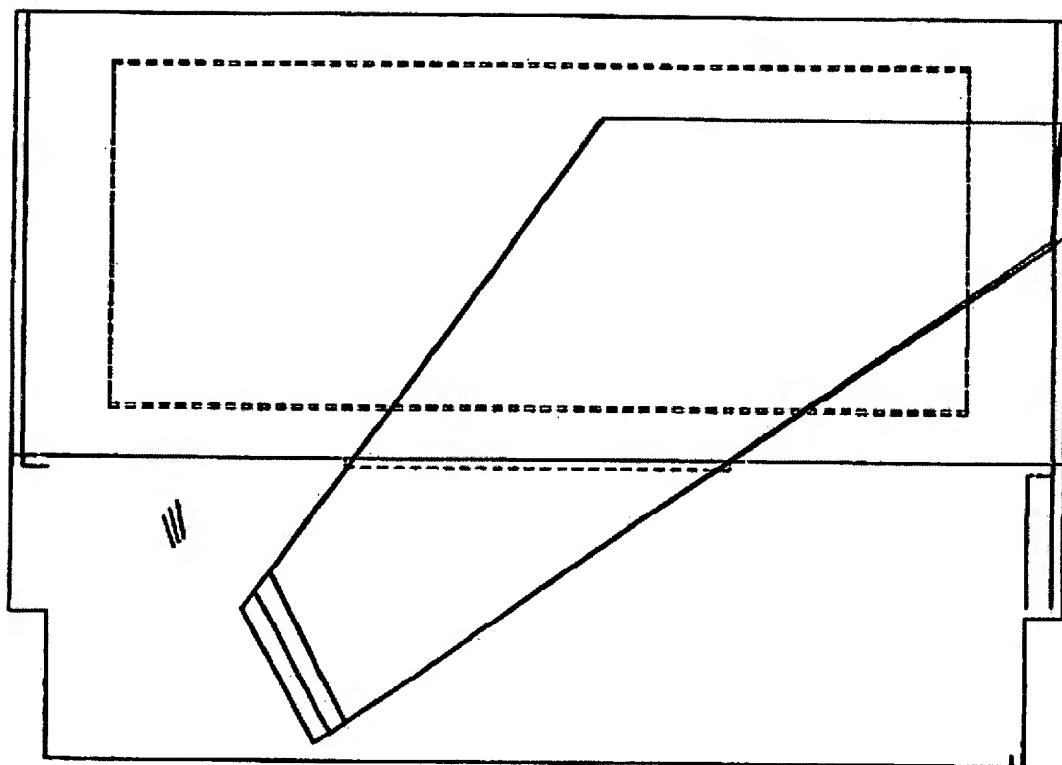
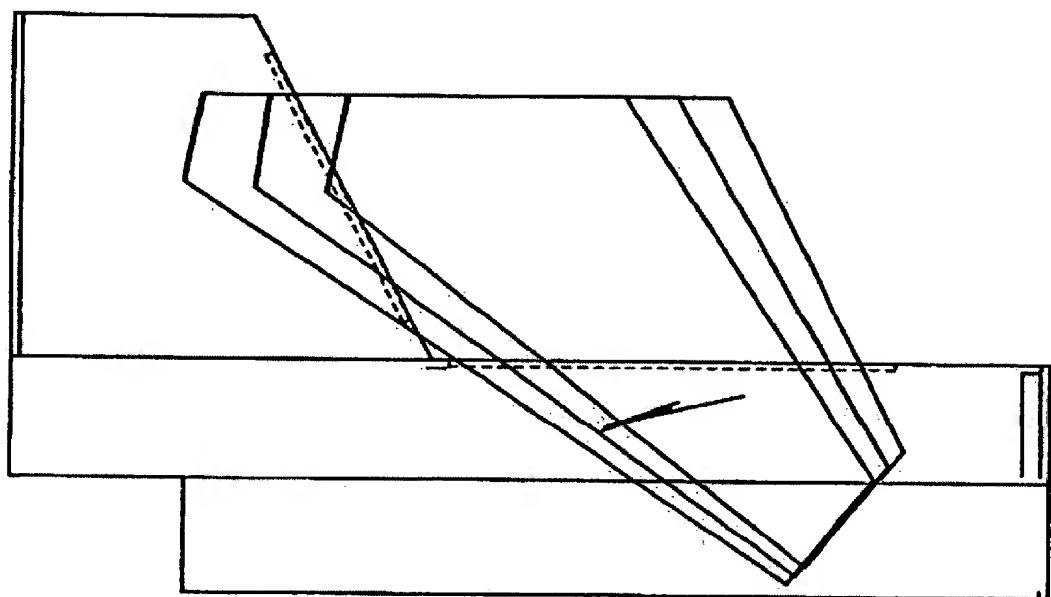


FIG. 5B4



**FIG. 5B5**

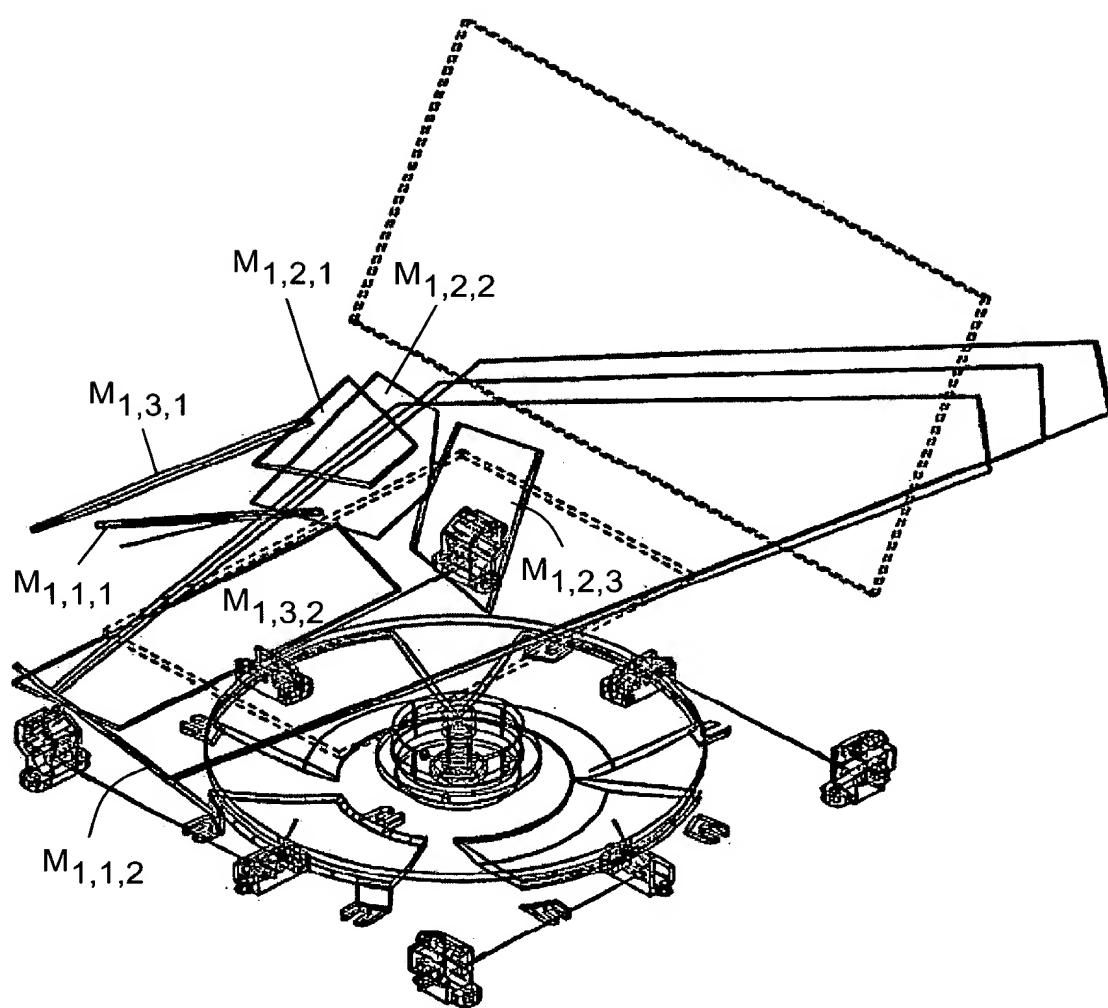


FIG. 5C1

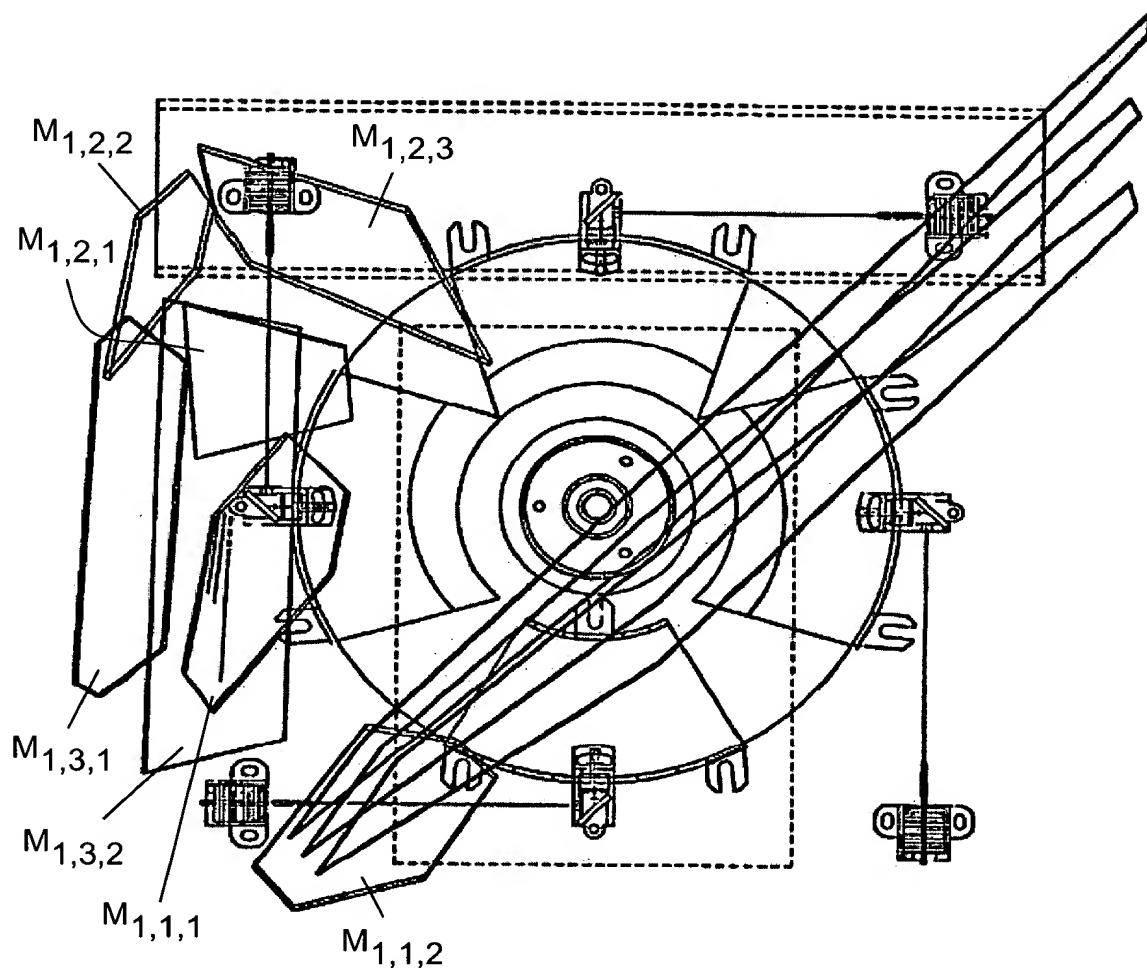


FIG. 5C2

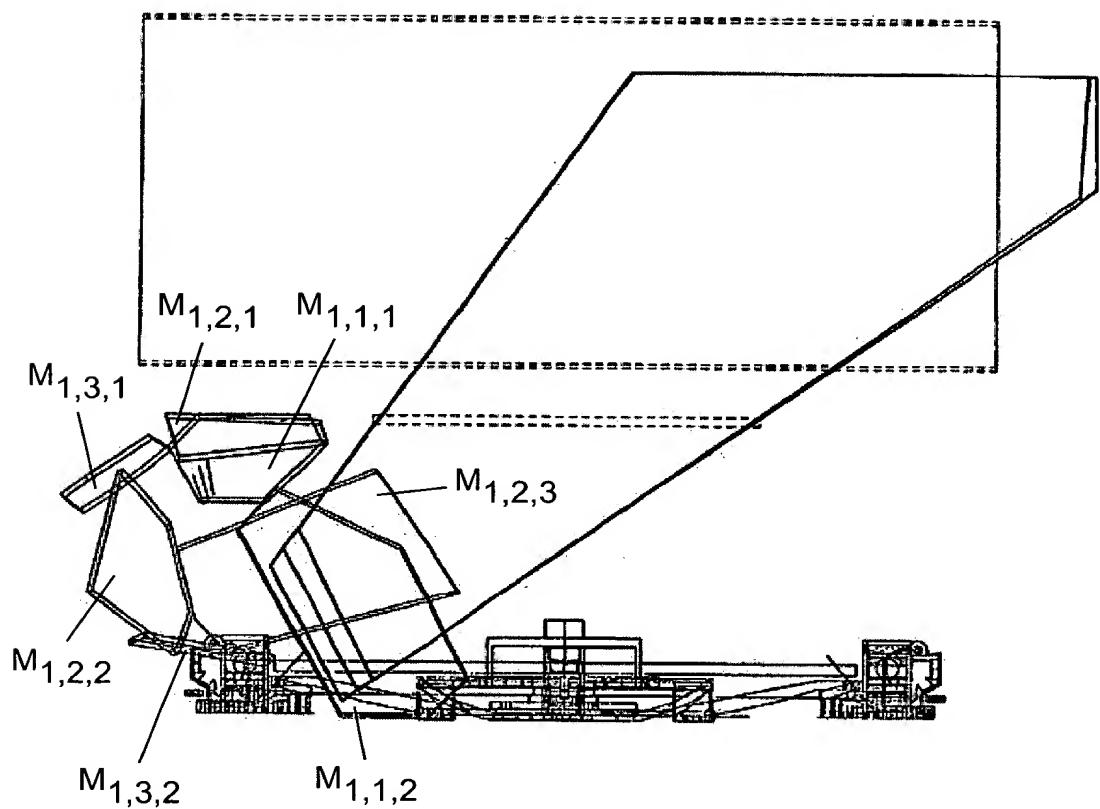


FIG. 5C3

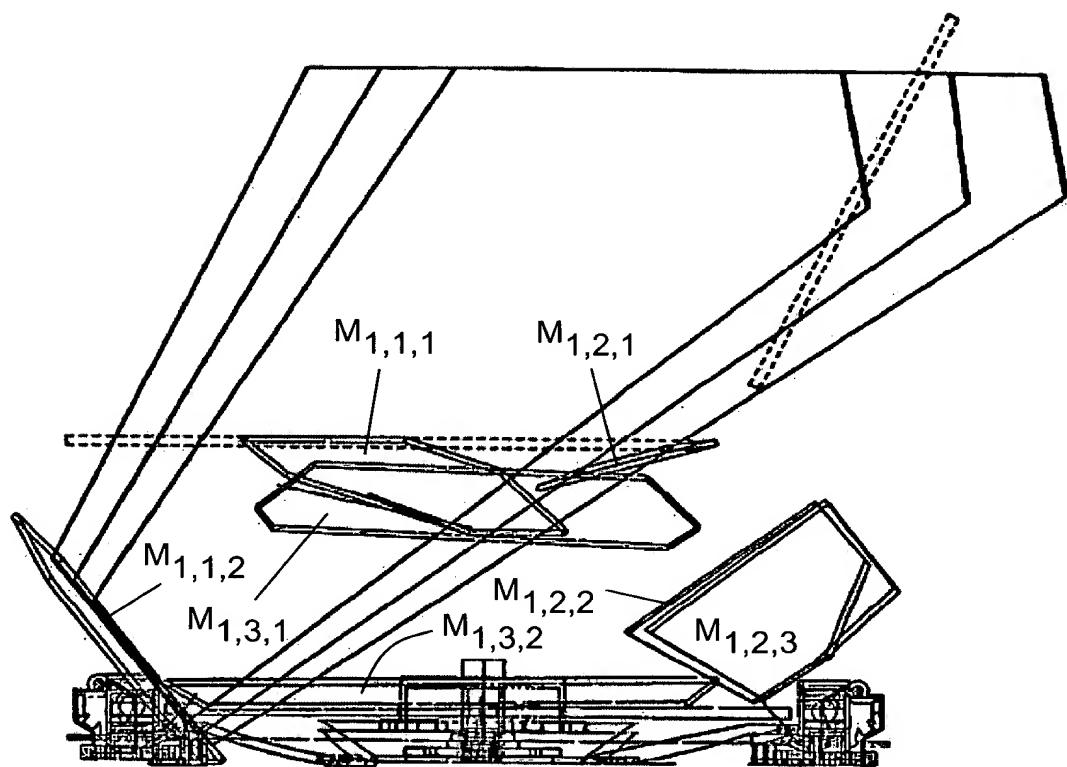
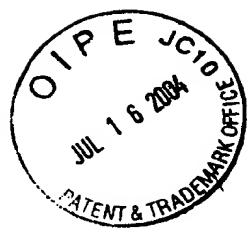


FIG. 5C4

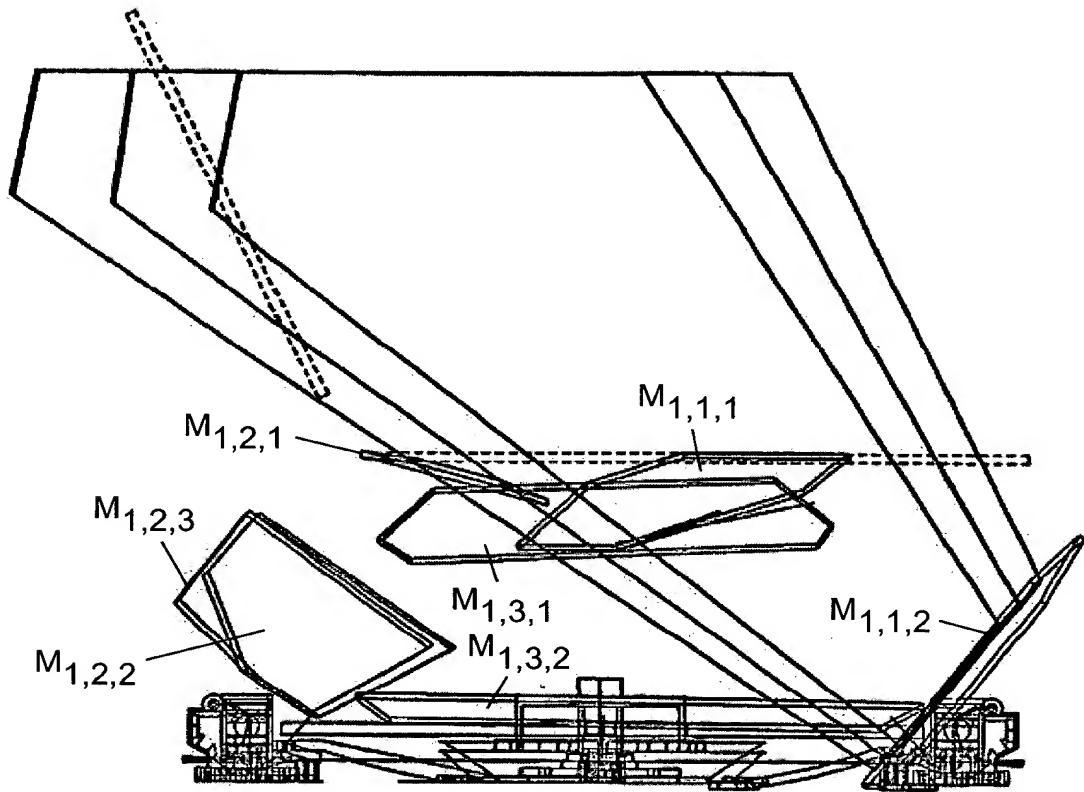


FIG. 5C5

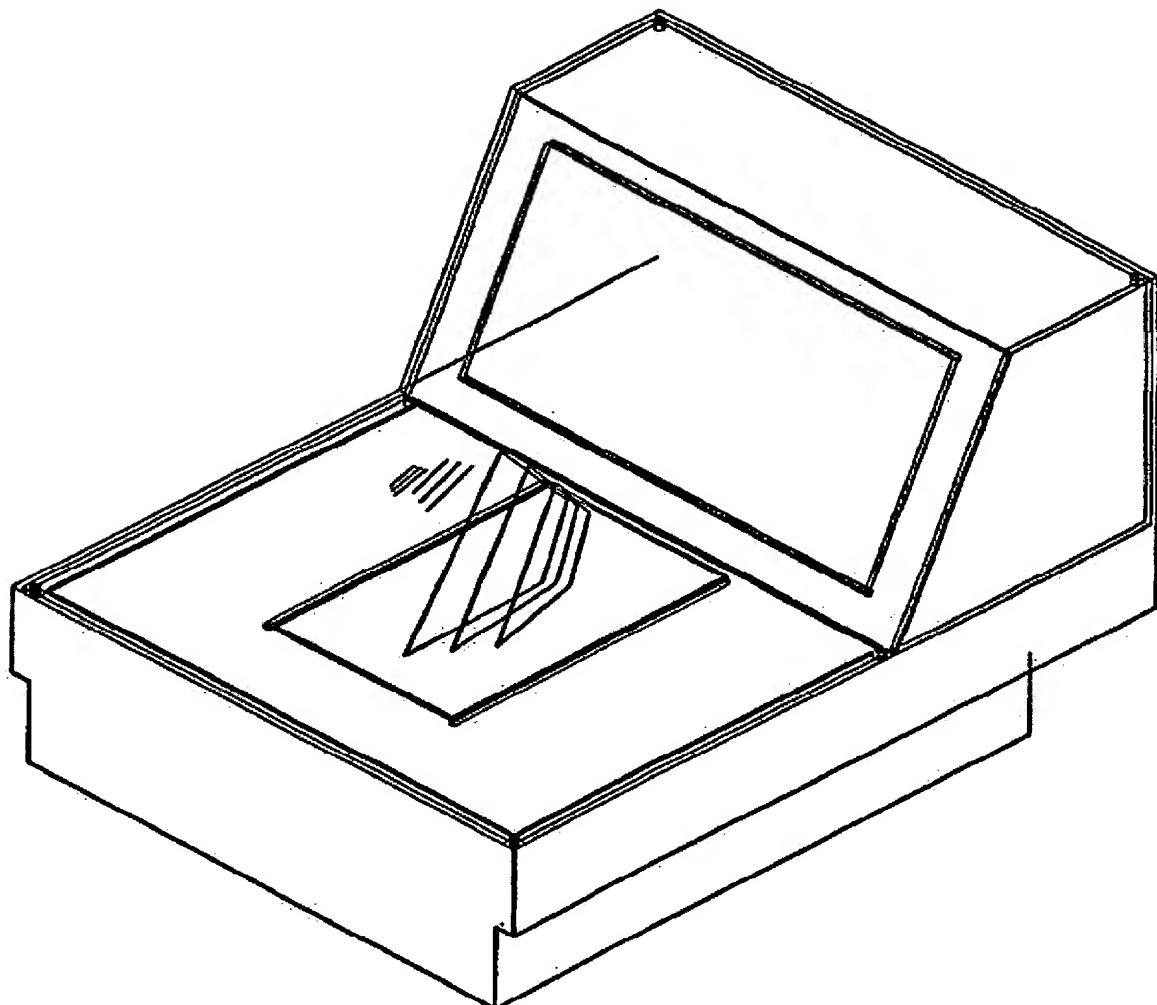


FIG. 5D1

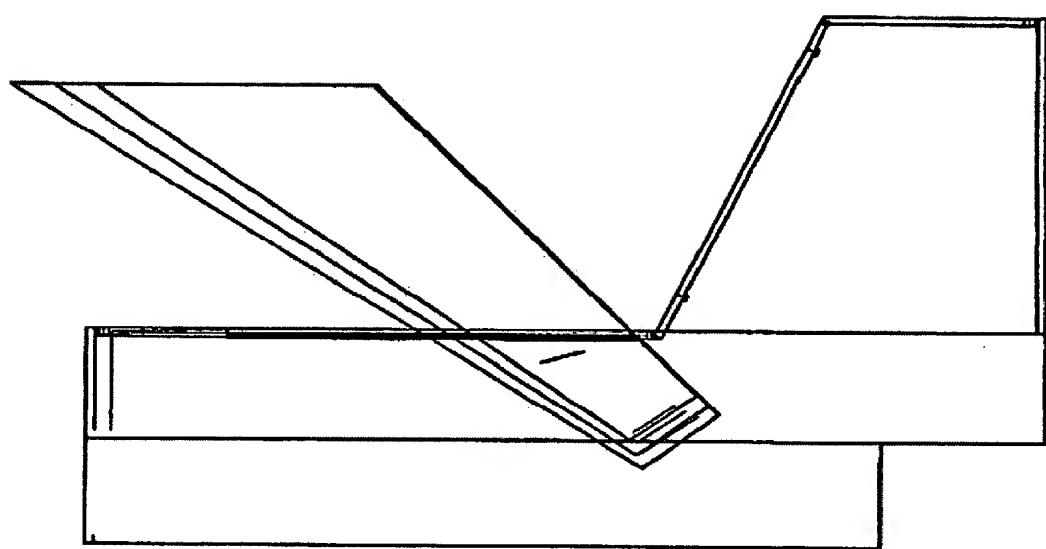
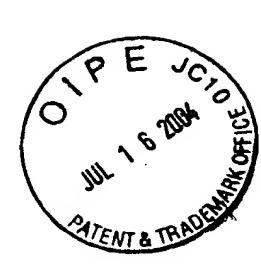


FIG. 5D2

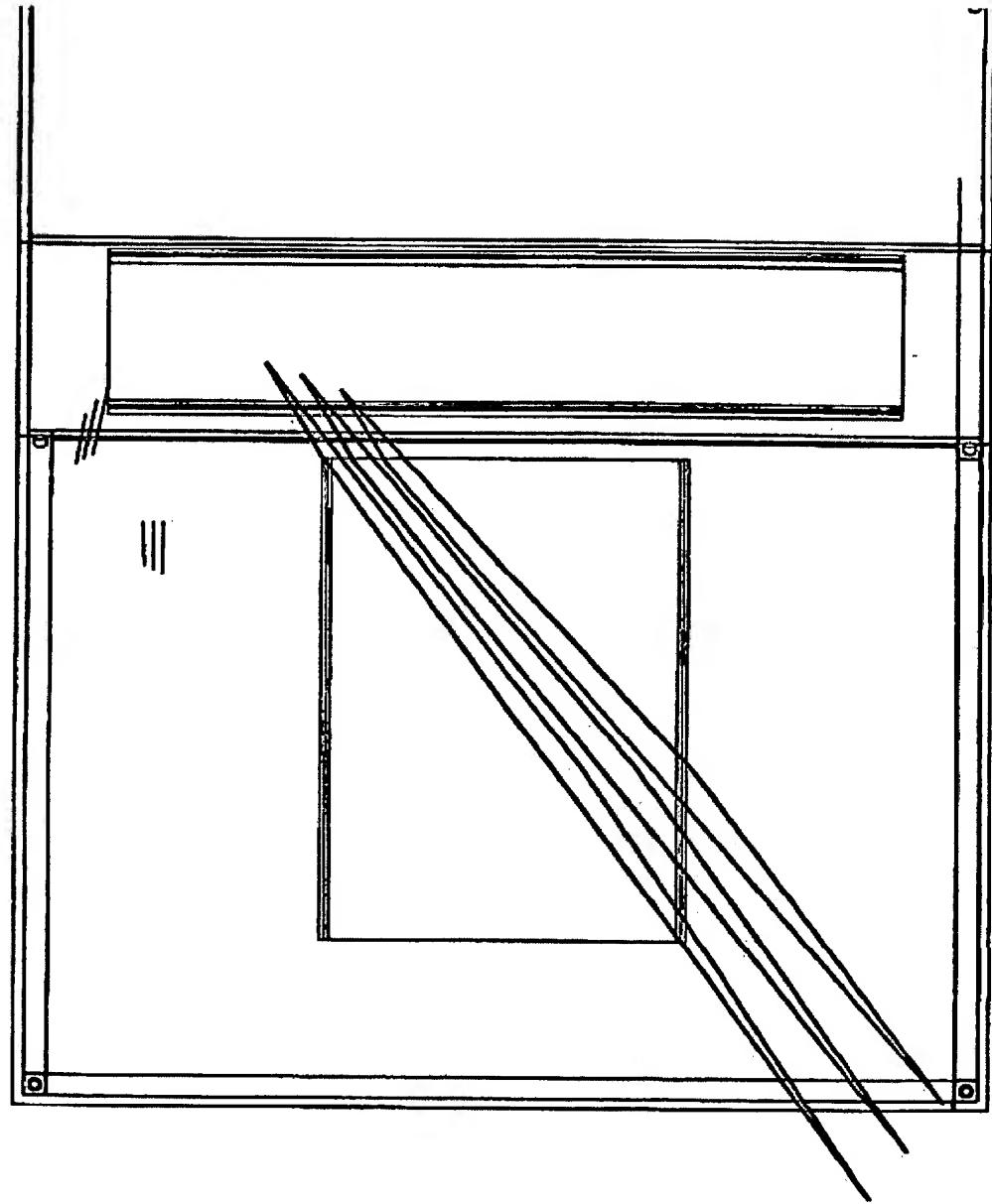
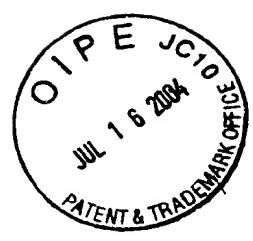


FIG. 5D3

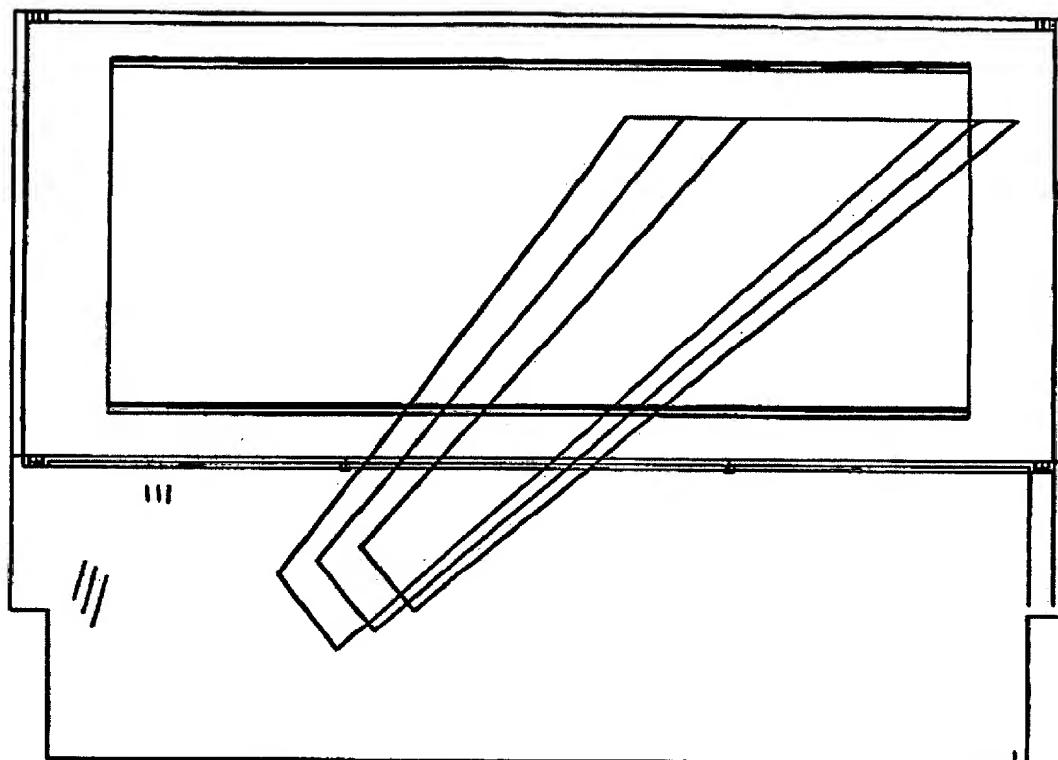
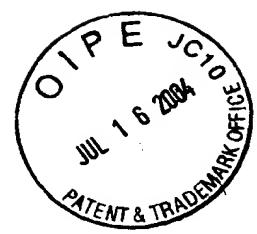


FIG. 5D4

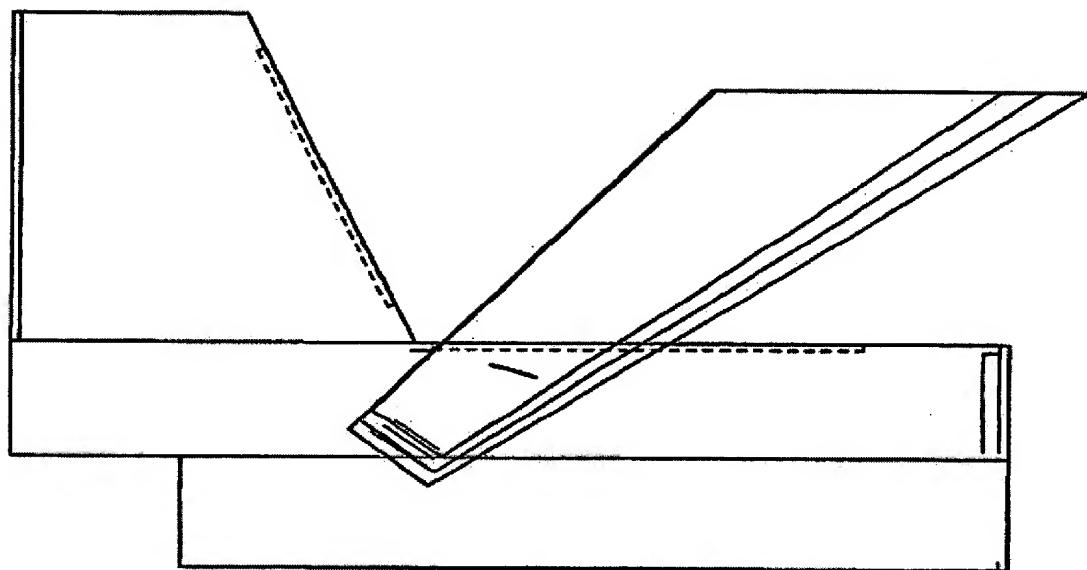
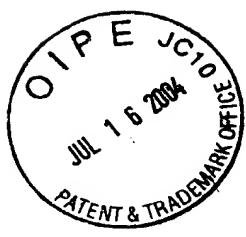


FIG. 5D5

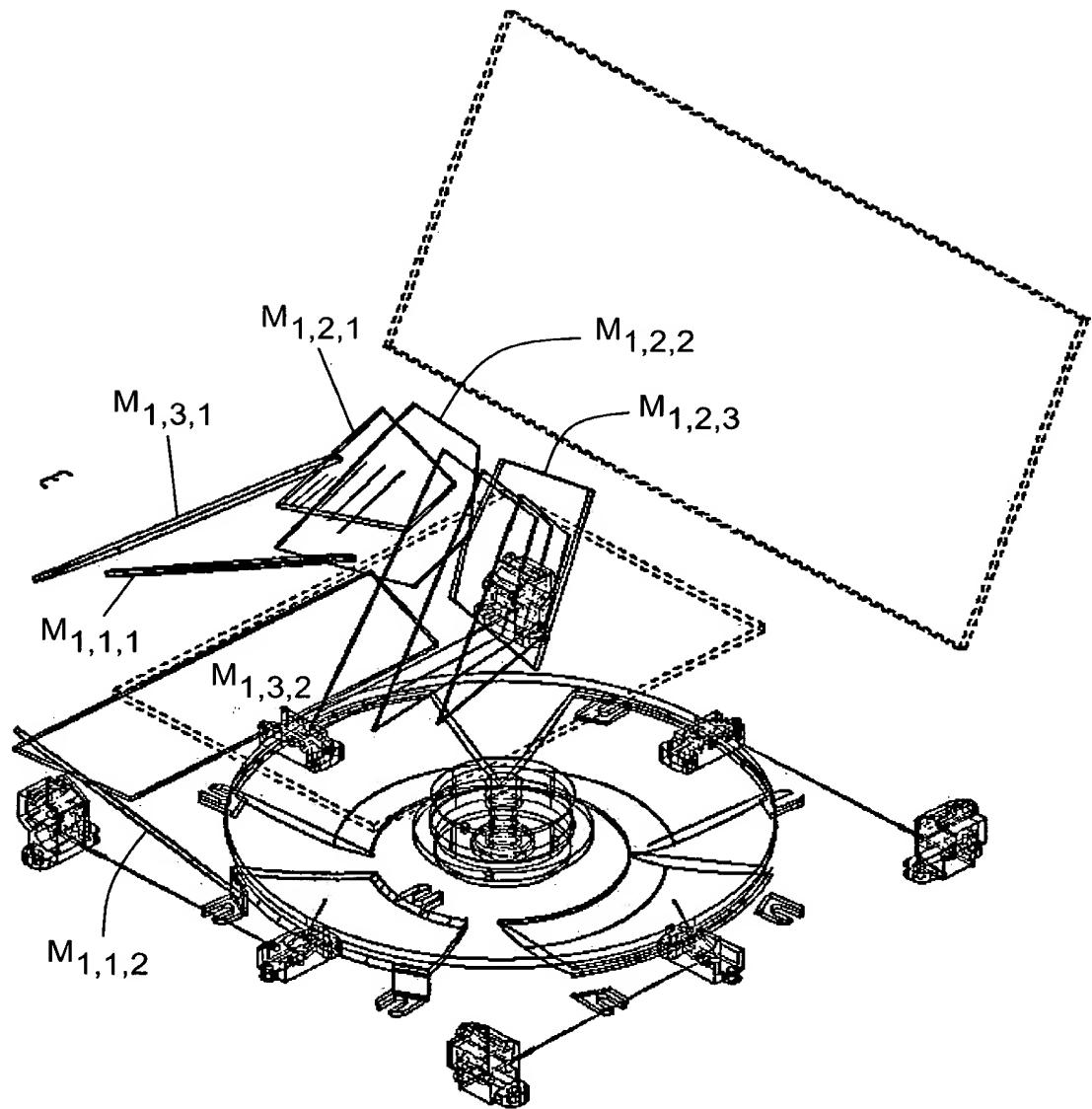
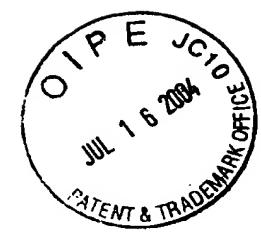


FIG. 5E1

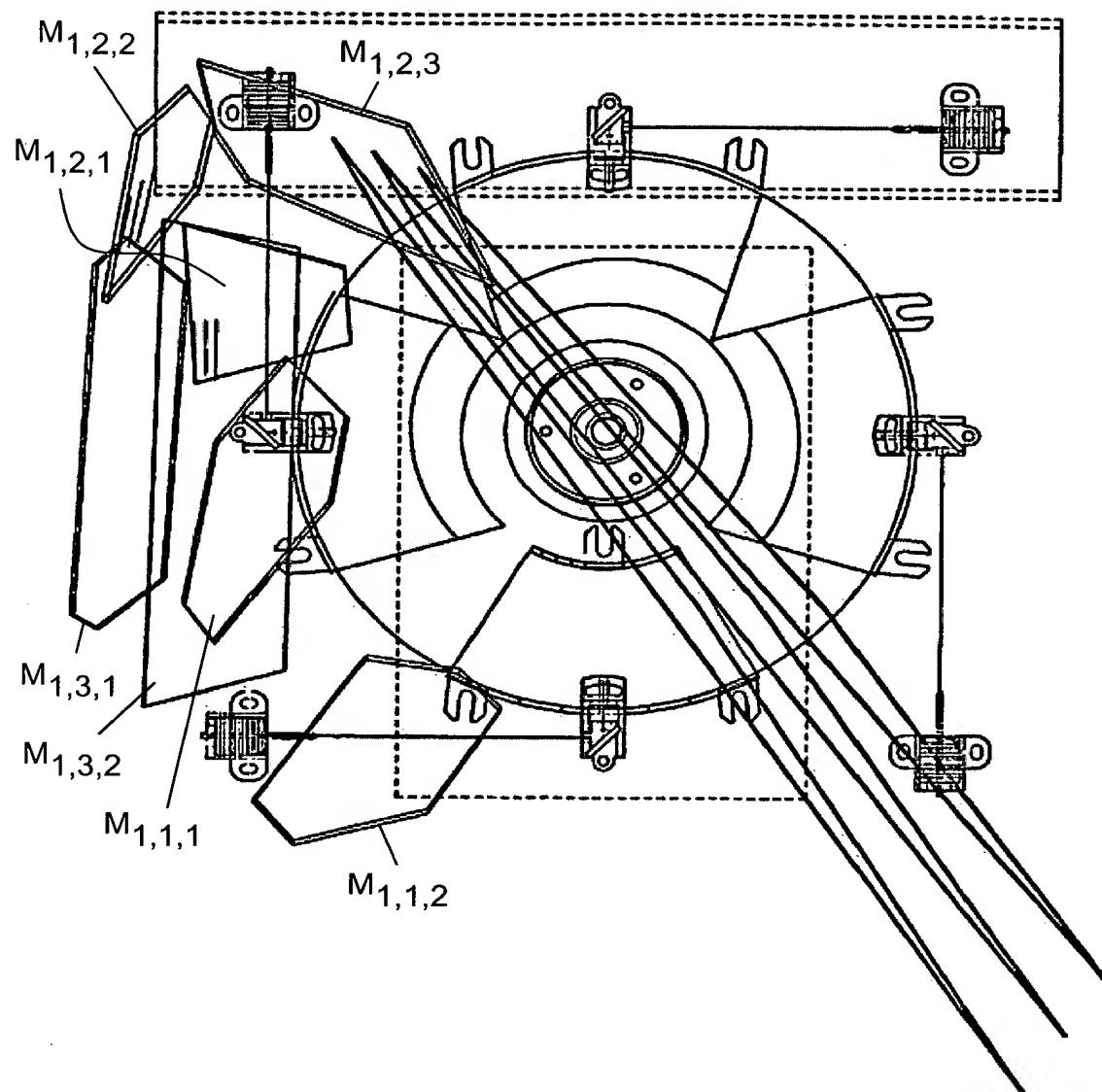
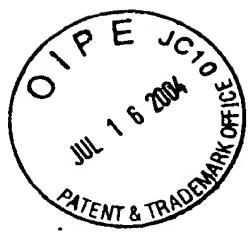


FIG. 5E2

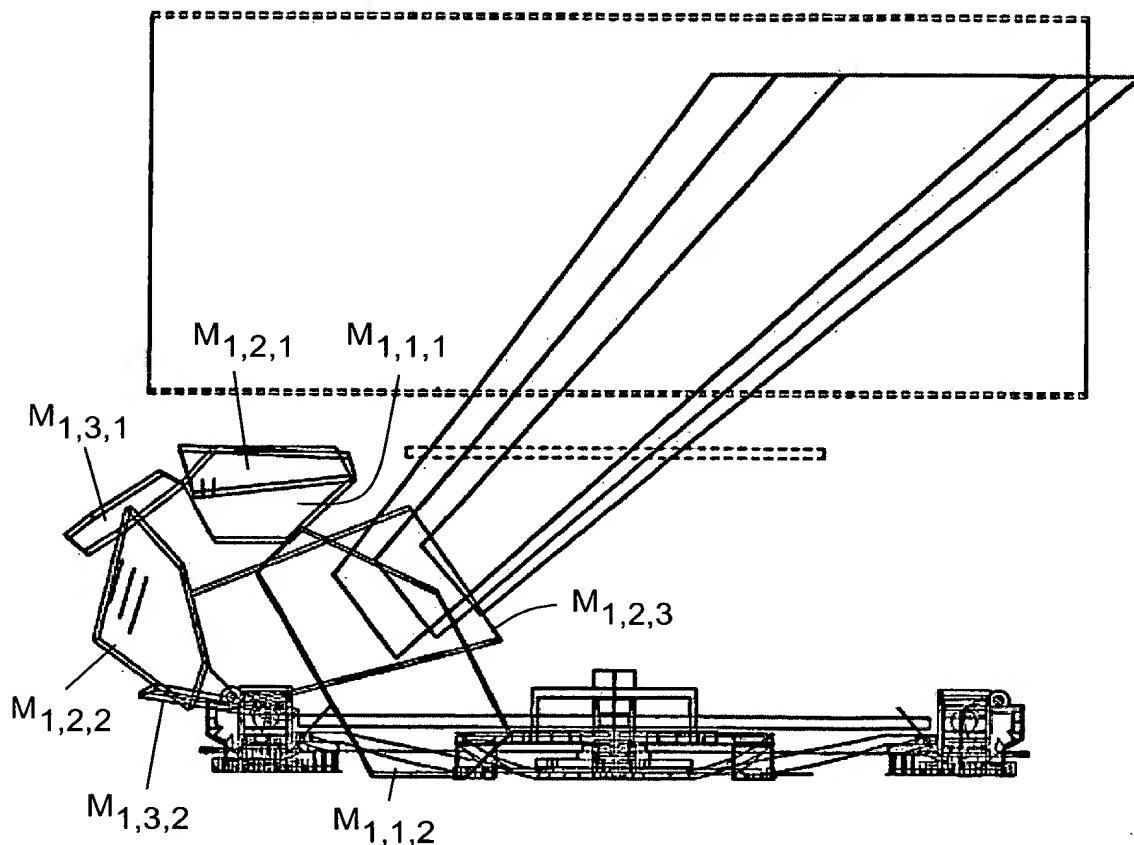
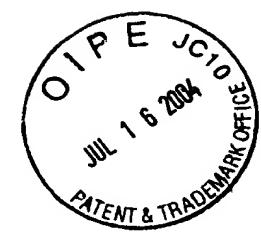


FIG. 5E3

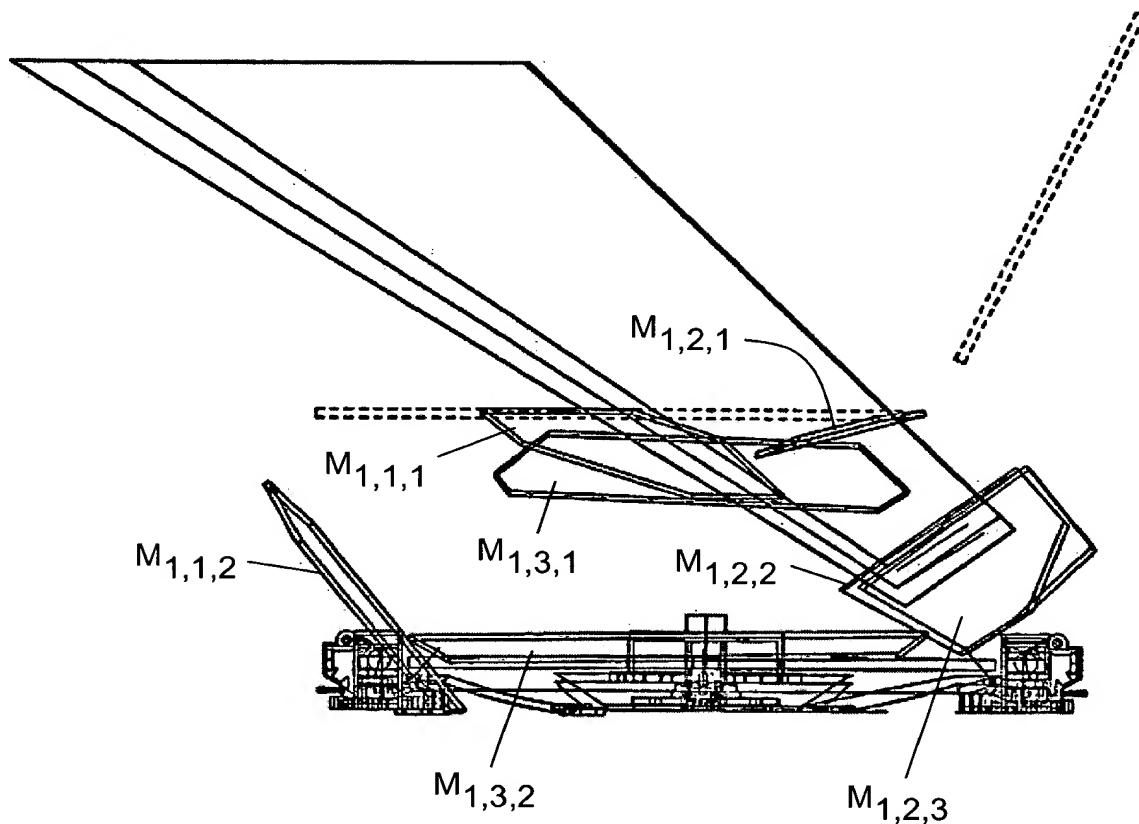
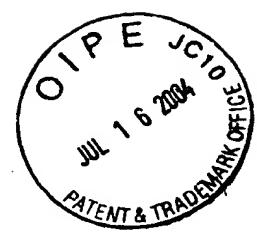


FIG. 5E4

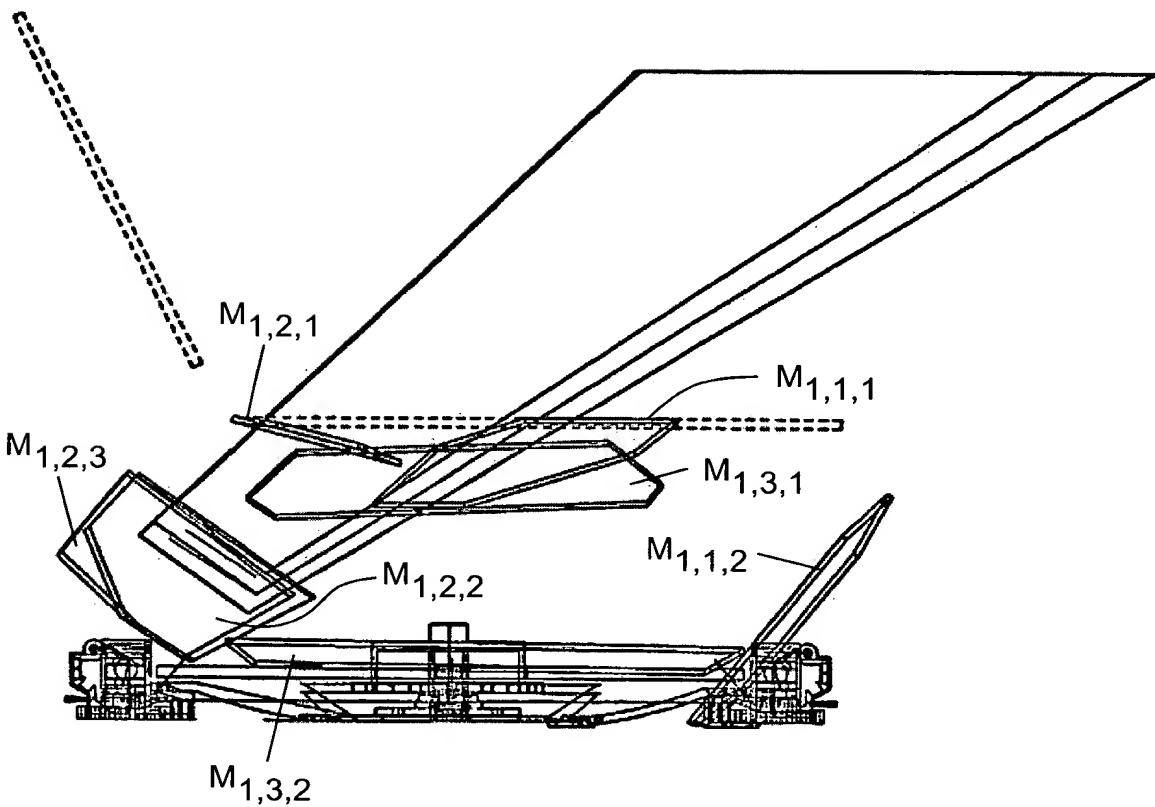
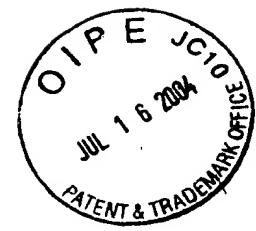


FIG. 5E5

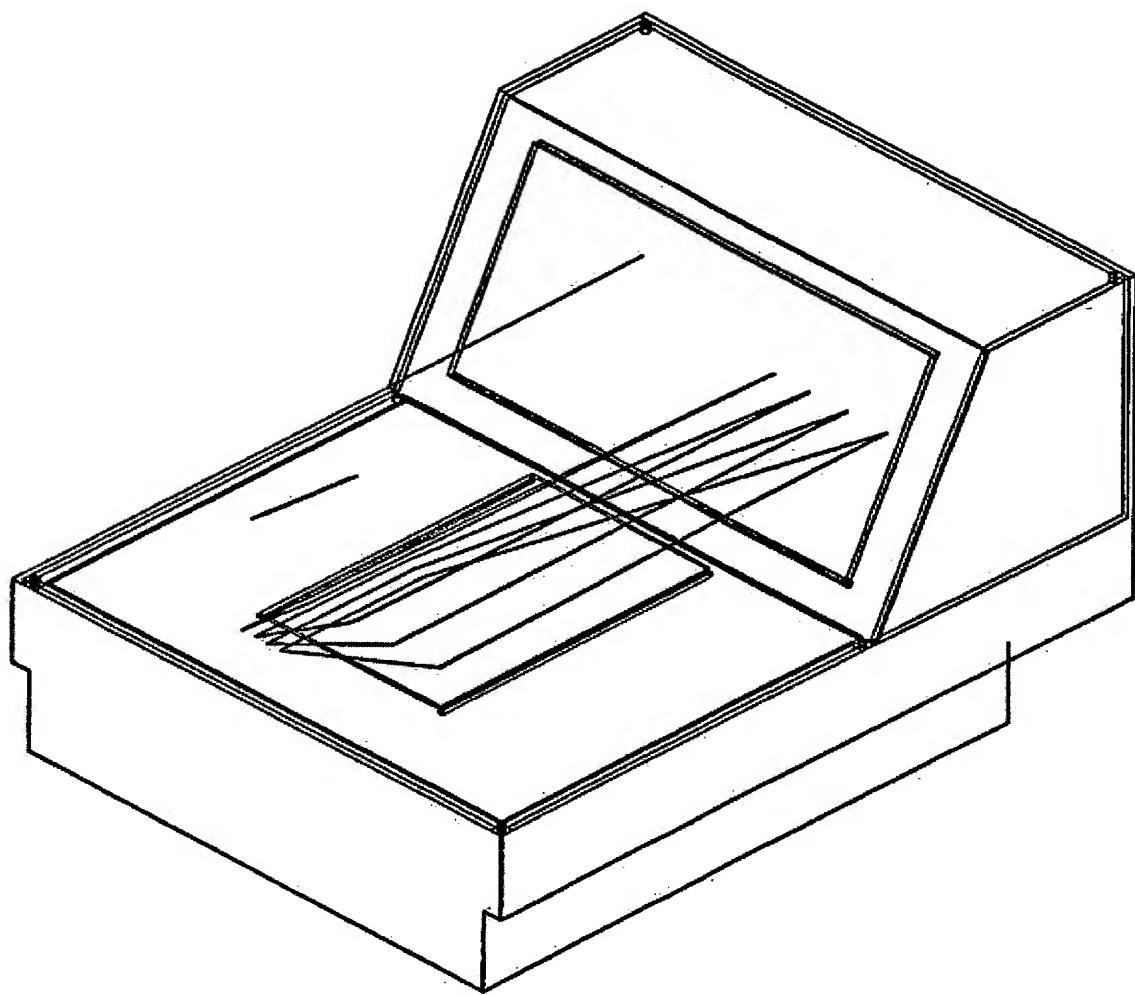


FIG. 5F1

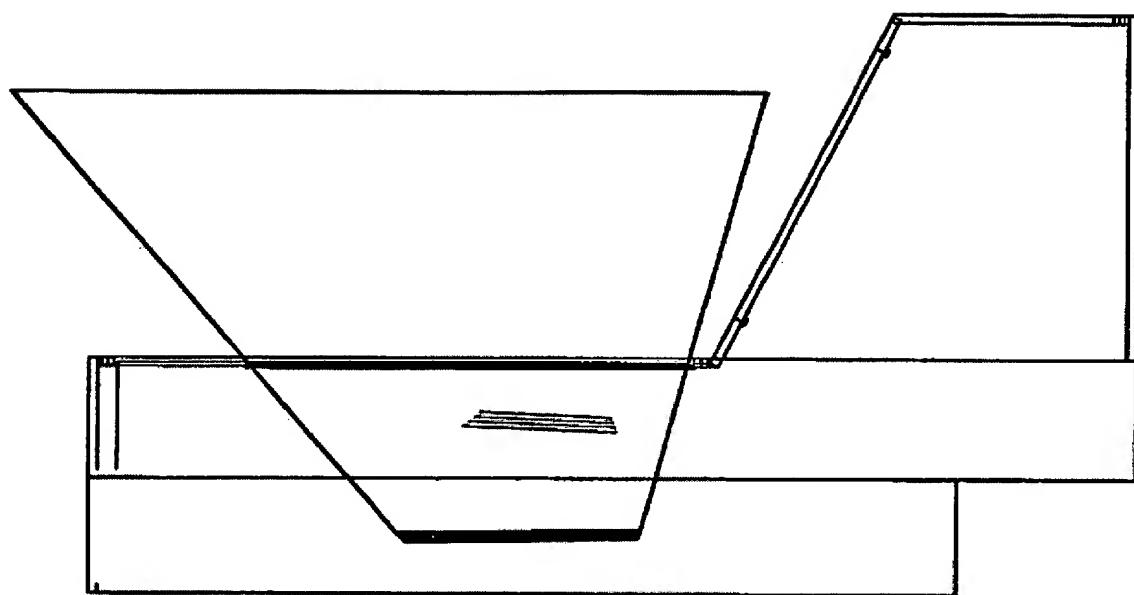


FIG. 5F2

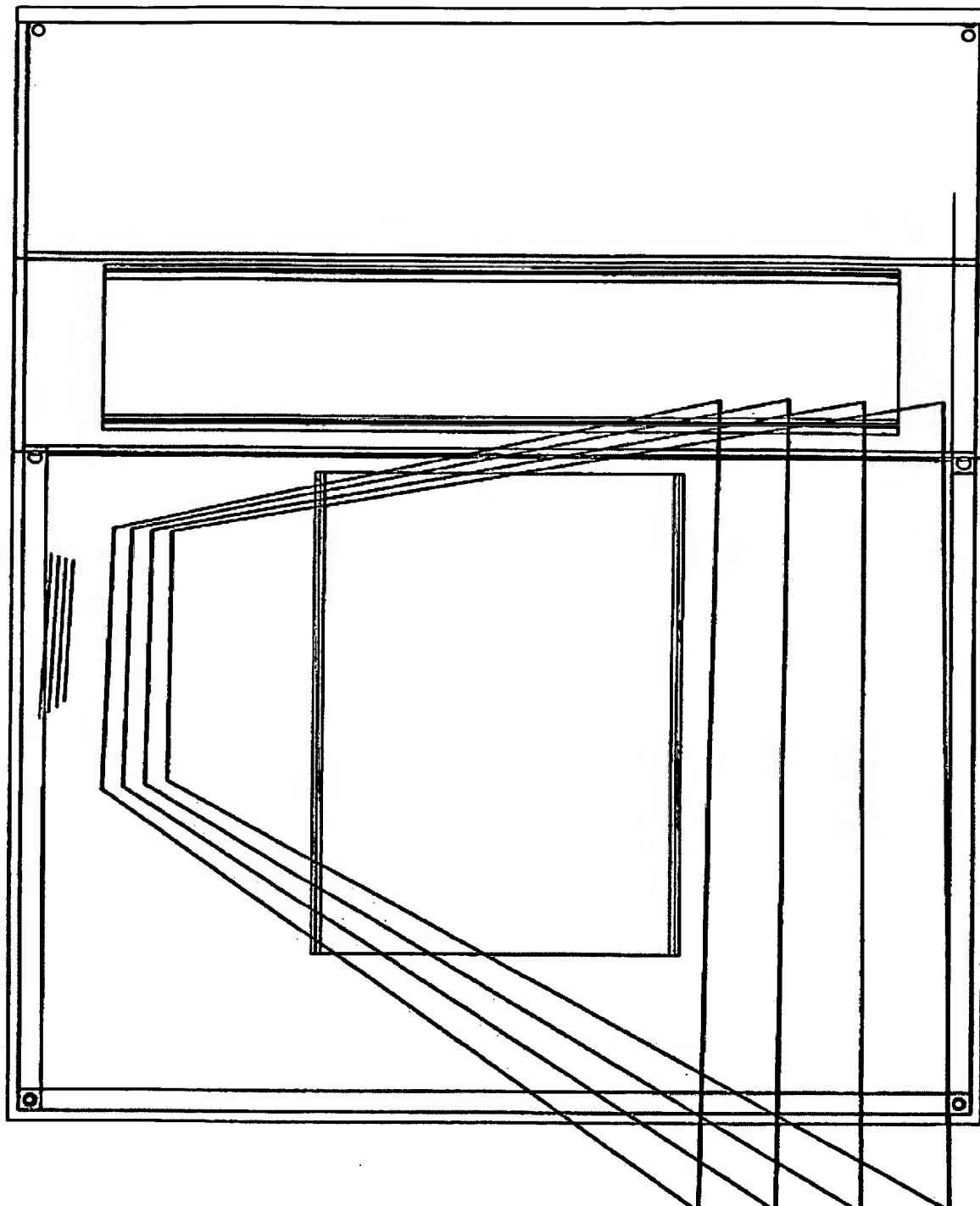


FIG. 5F3

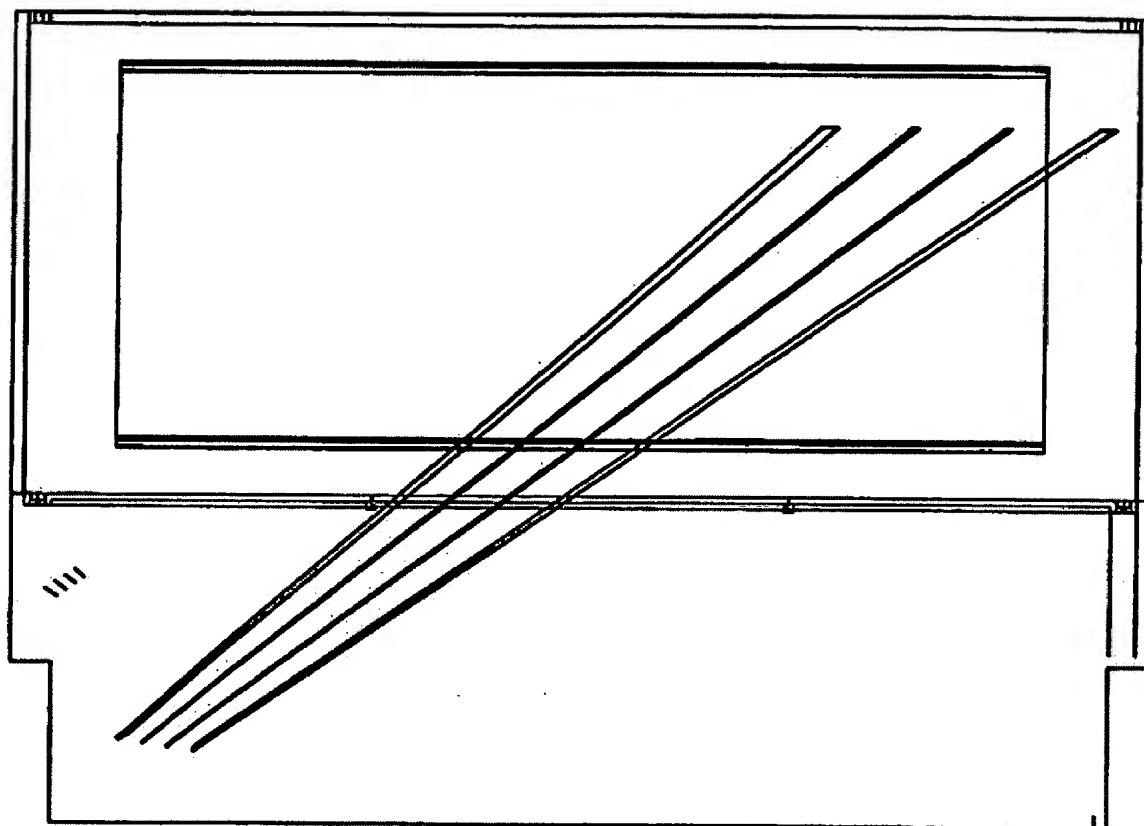


FIG. 5F4

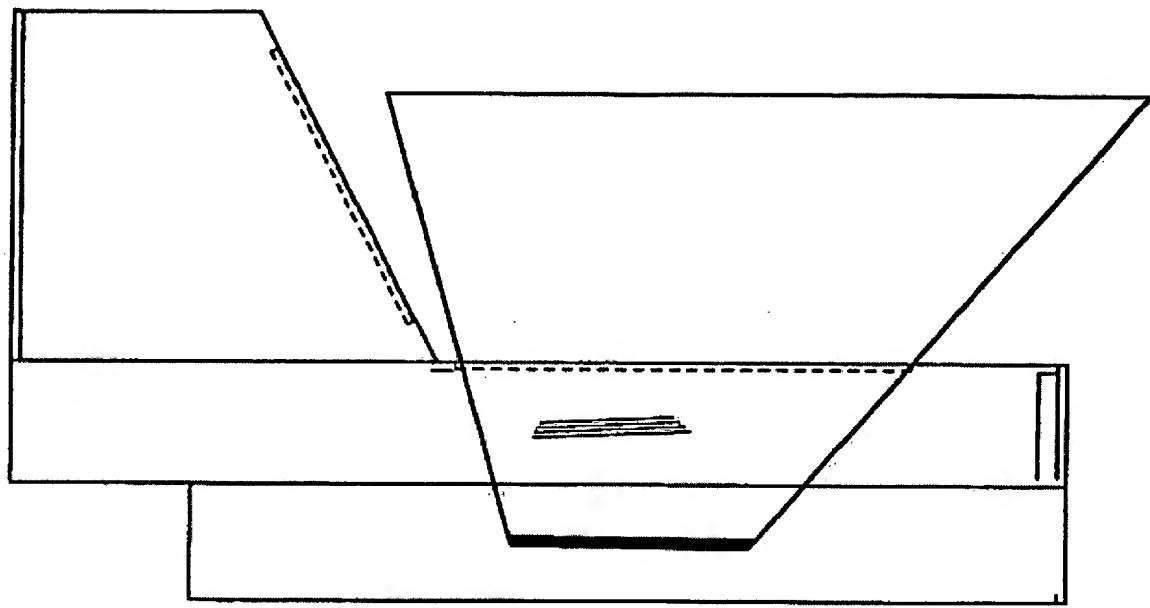


FIG. 5F5

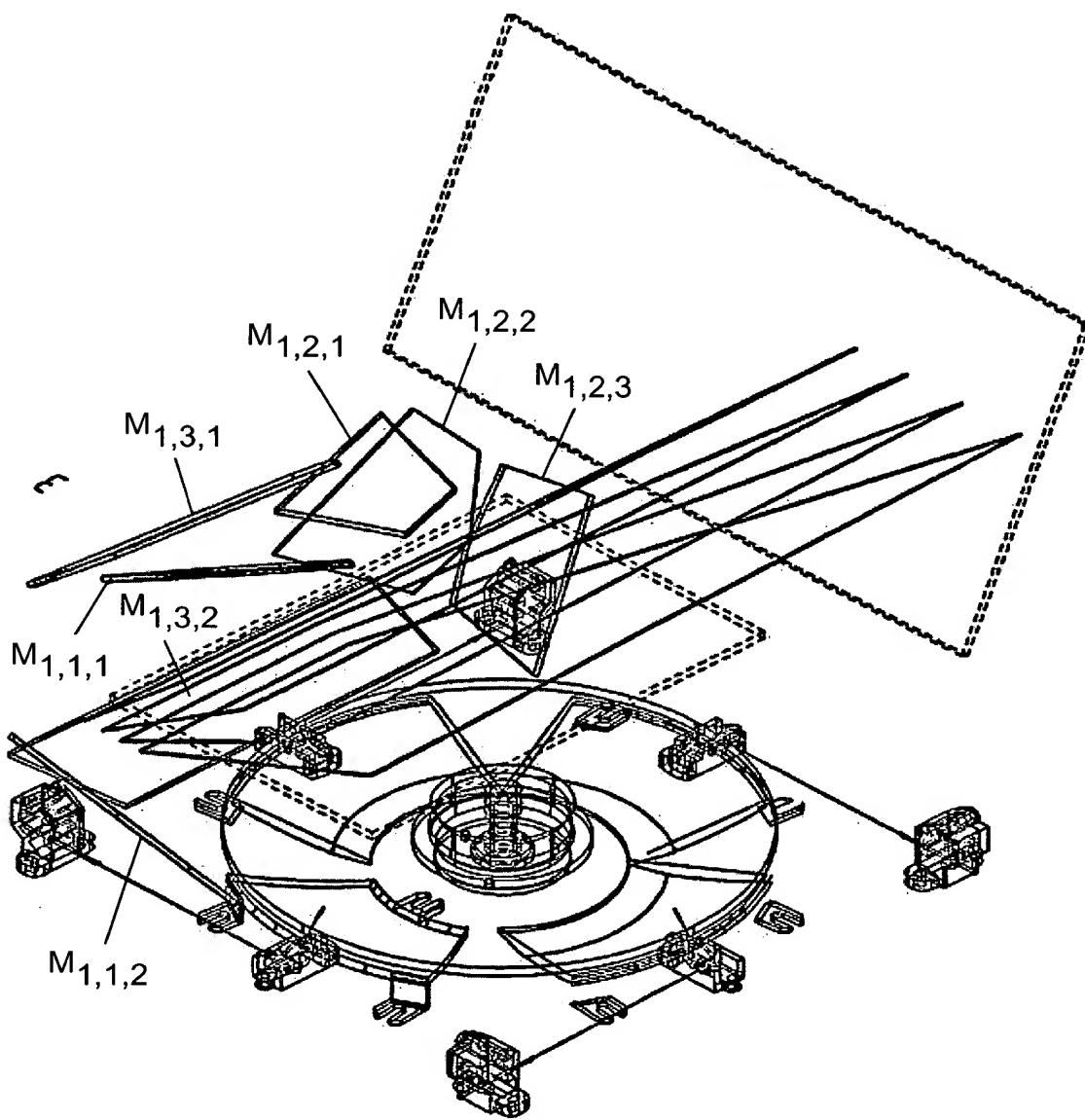


FIG. 5G1

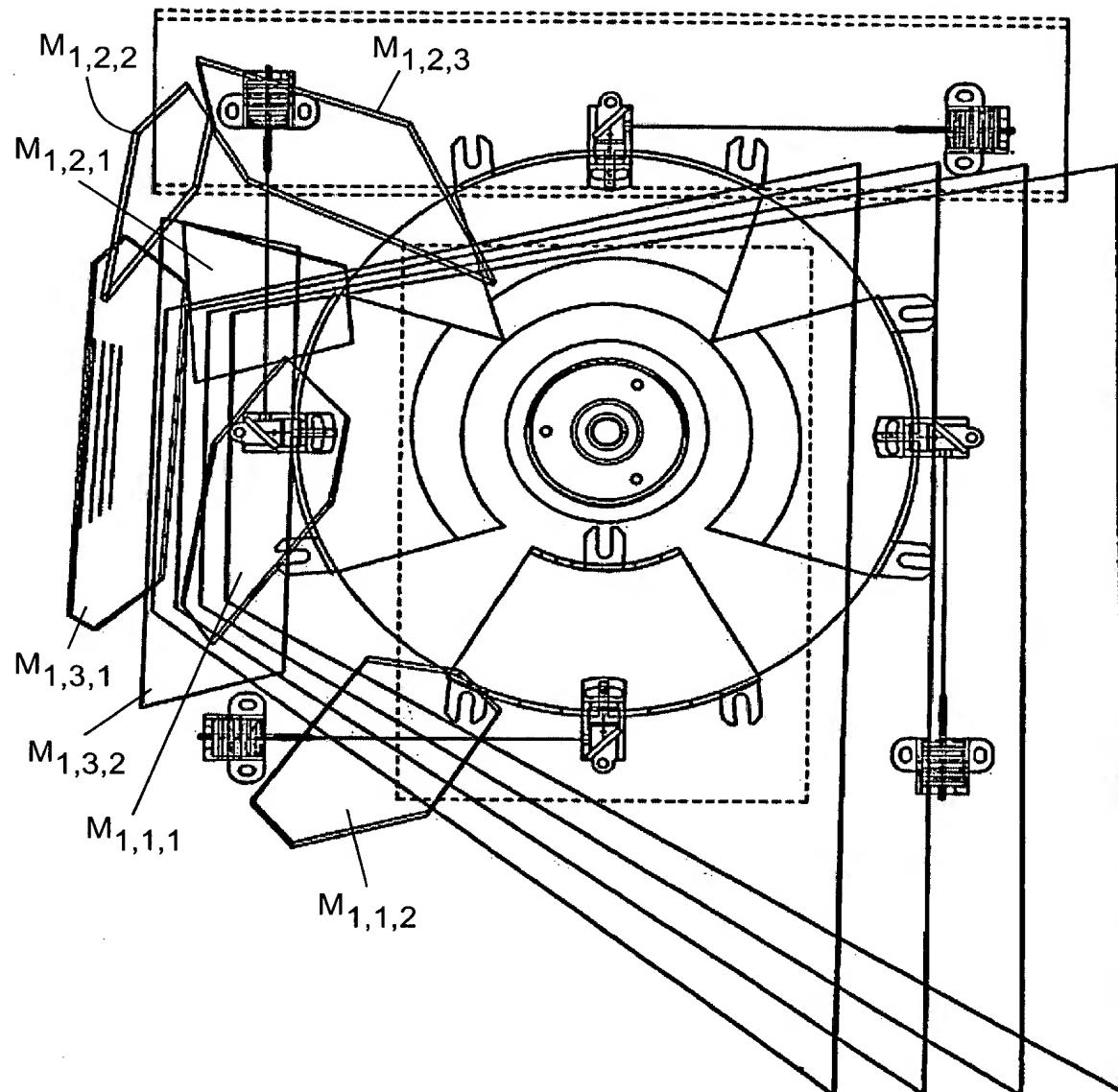
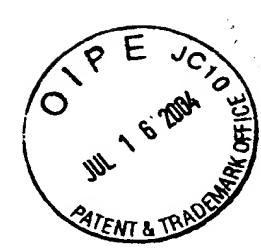


FIG. 5G2

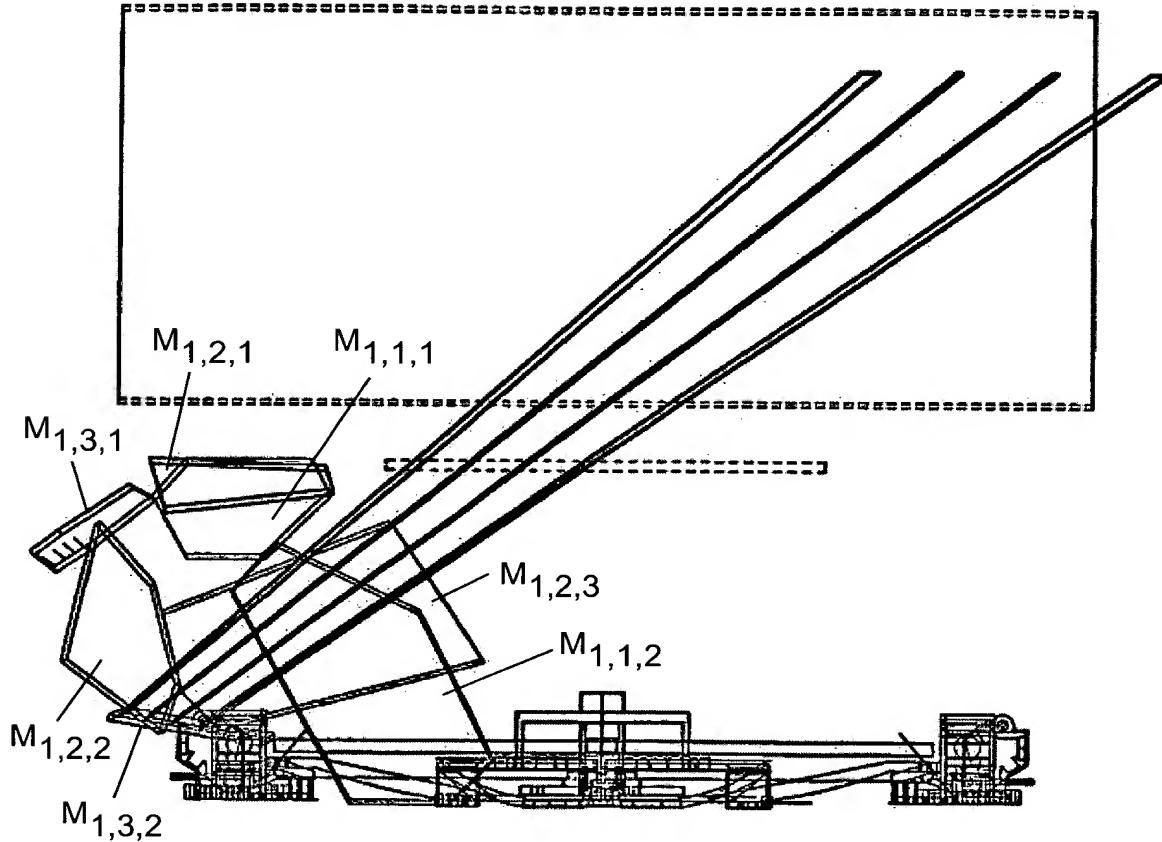


FIG. 5G3

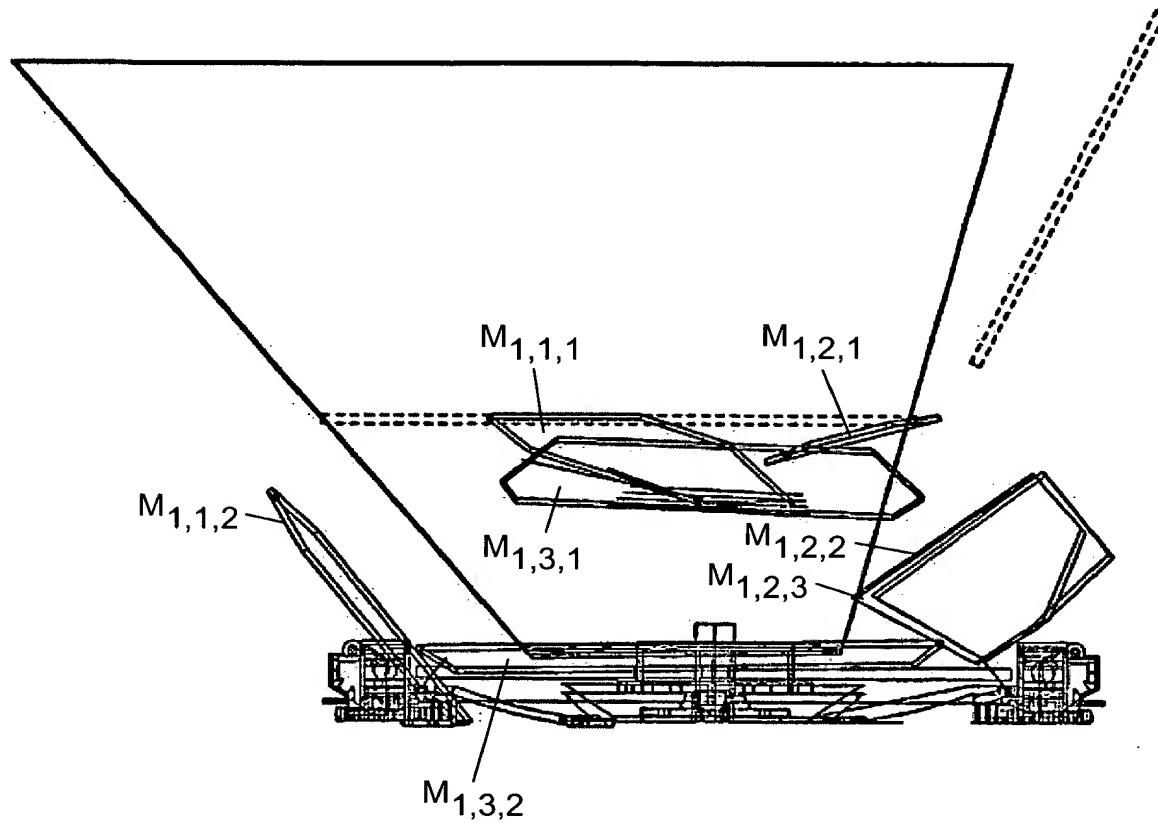
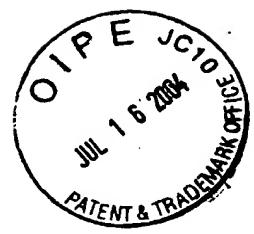


FIG. 5G4

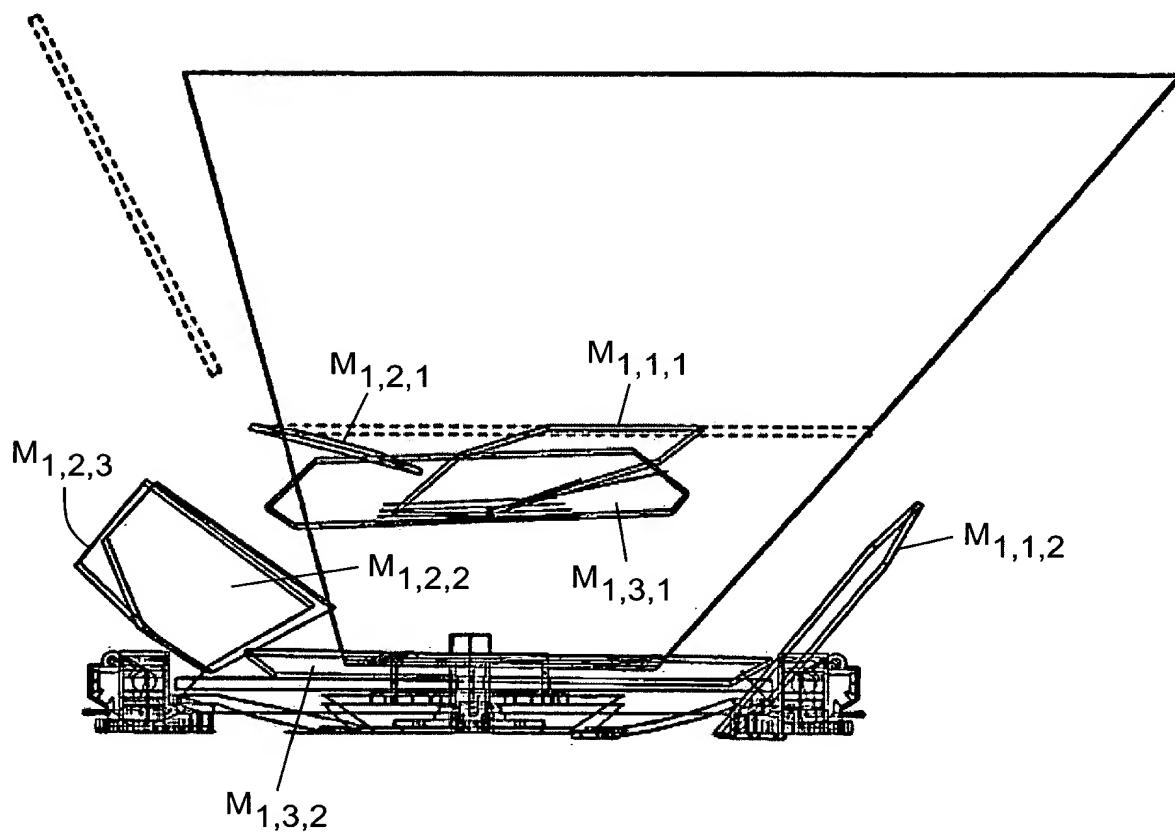
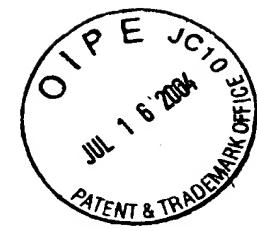


FIG. 5G5

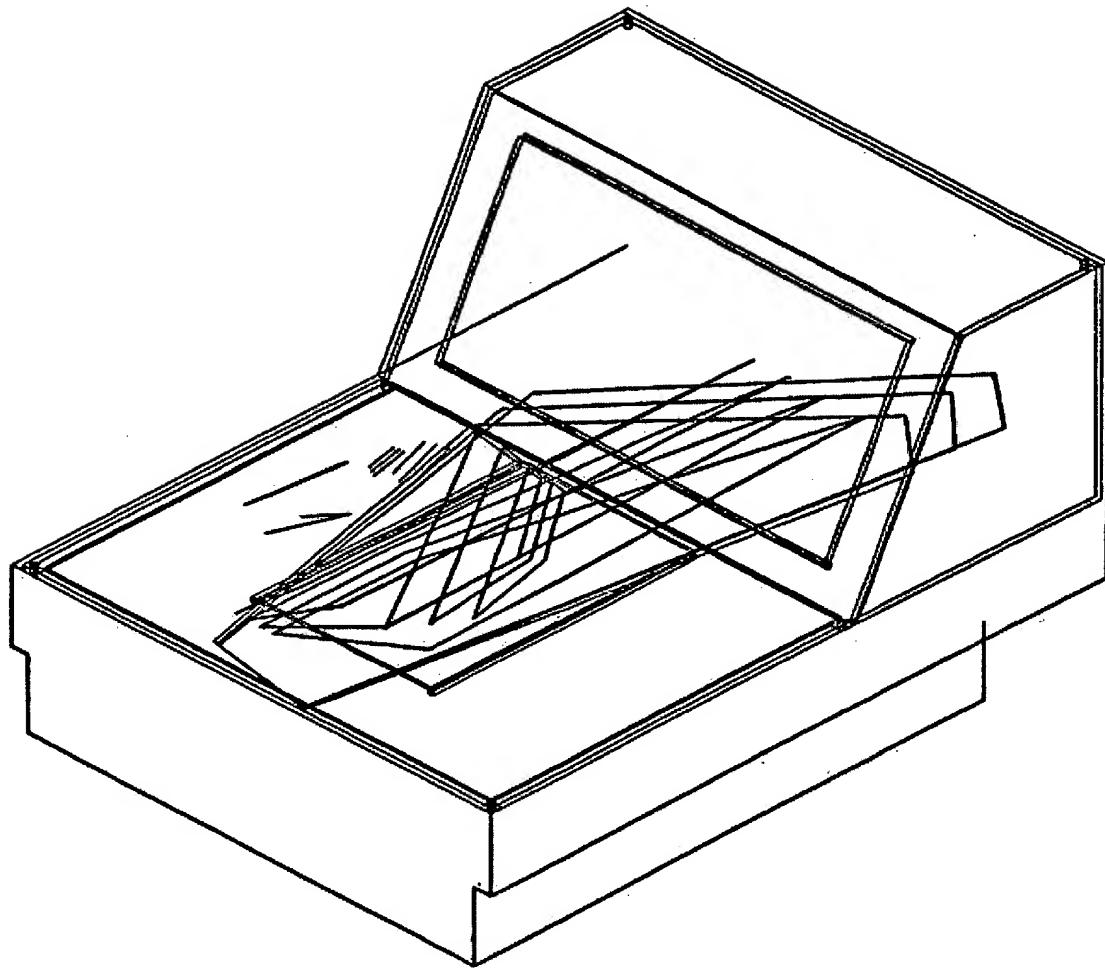


FIG. 5H1

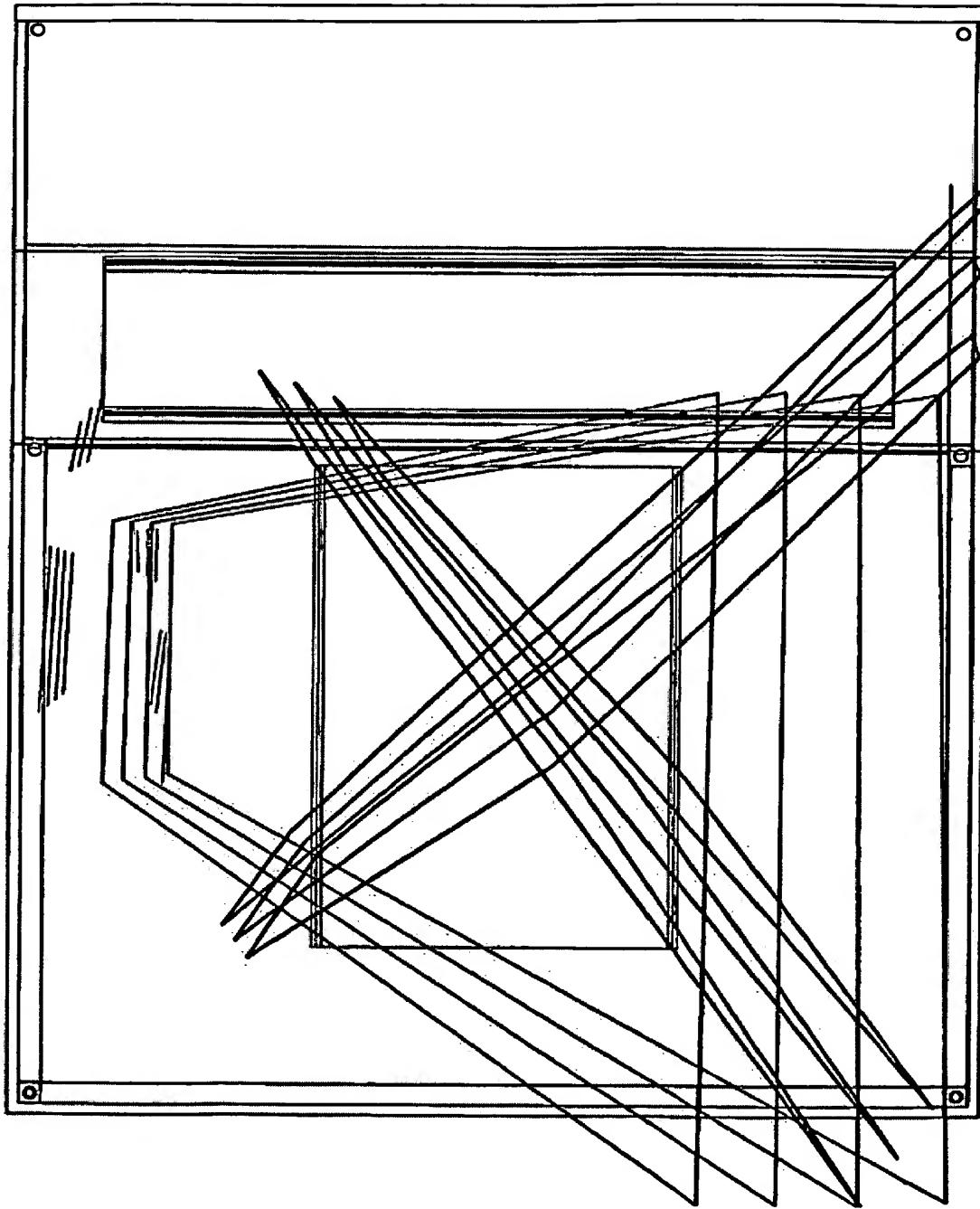


FIG. 5H2

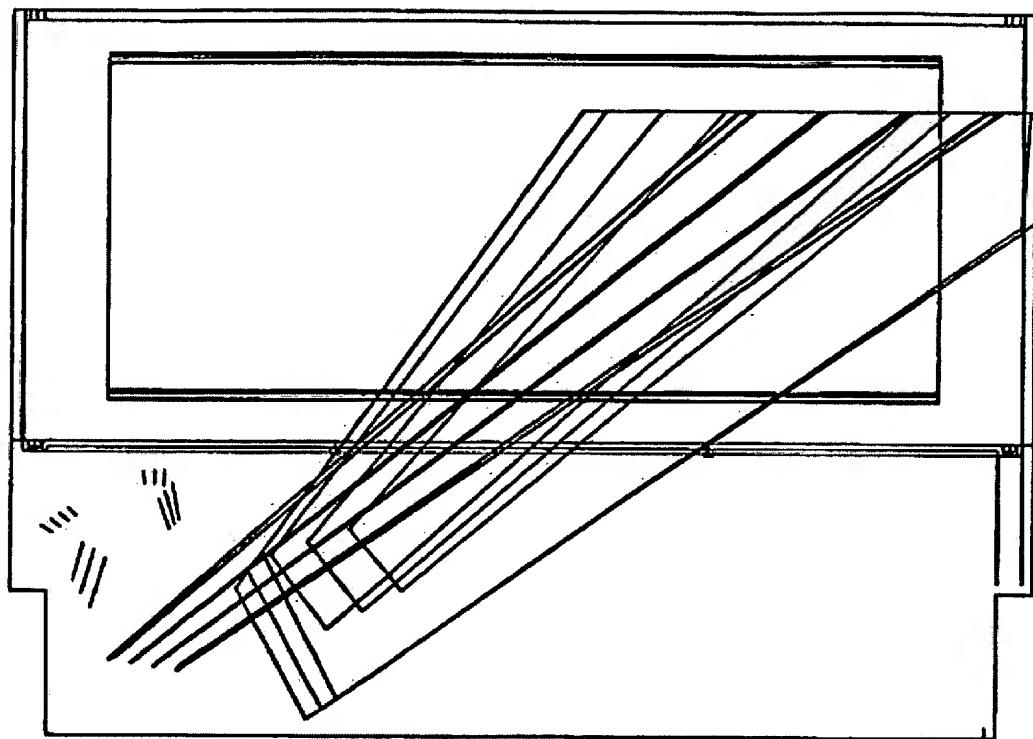


FIG. 5H3

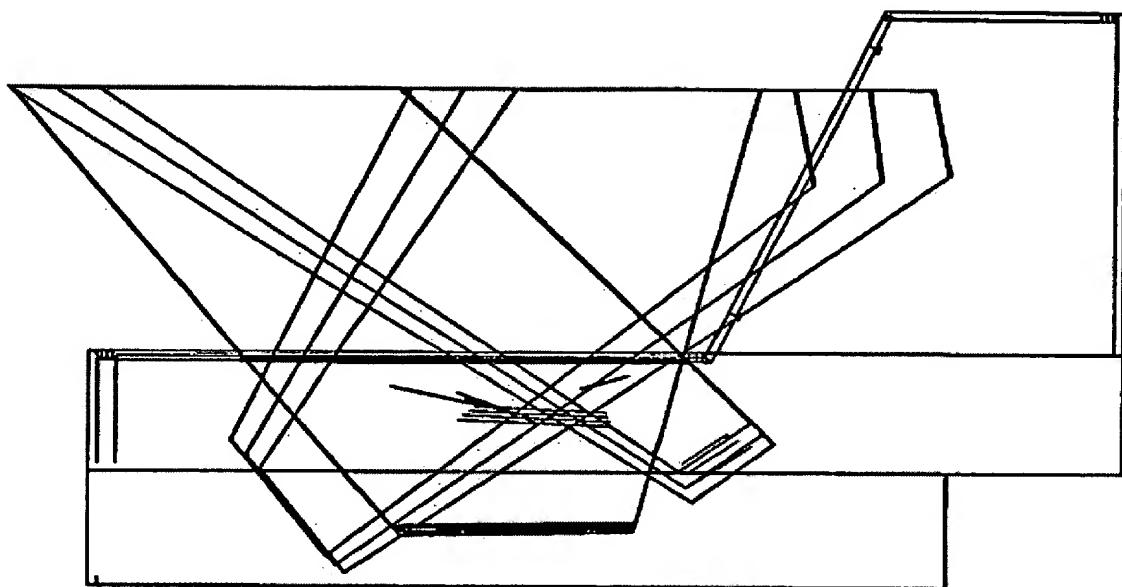


FIG. 5H4

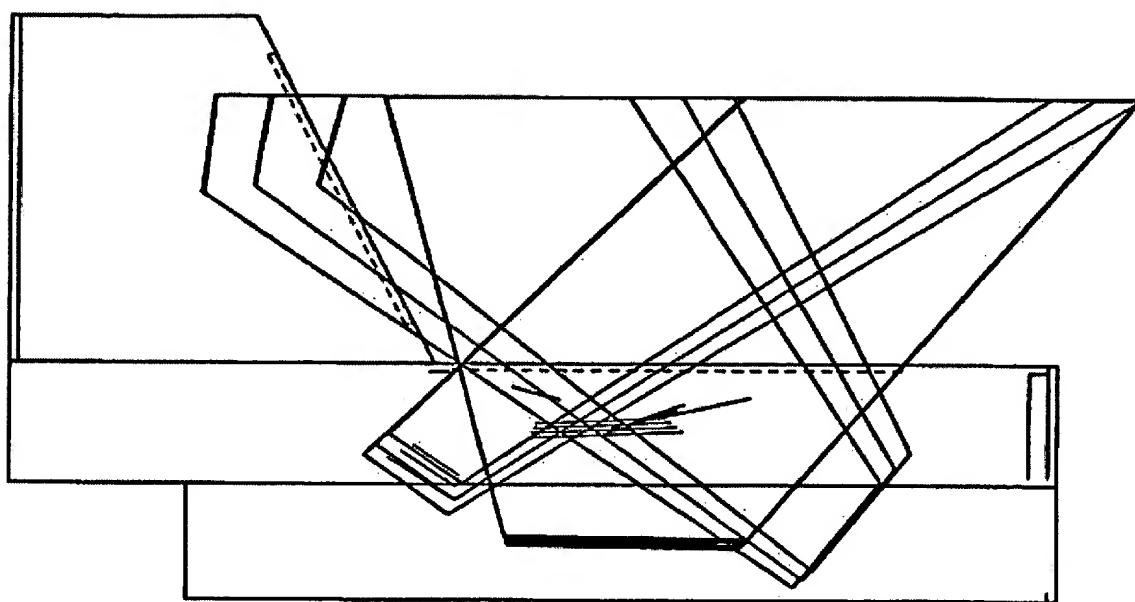
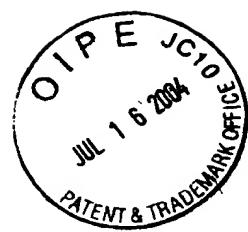


FIG. 5H5

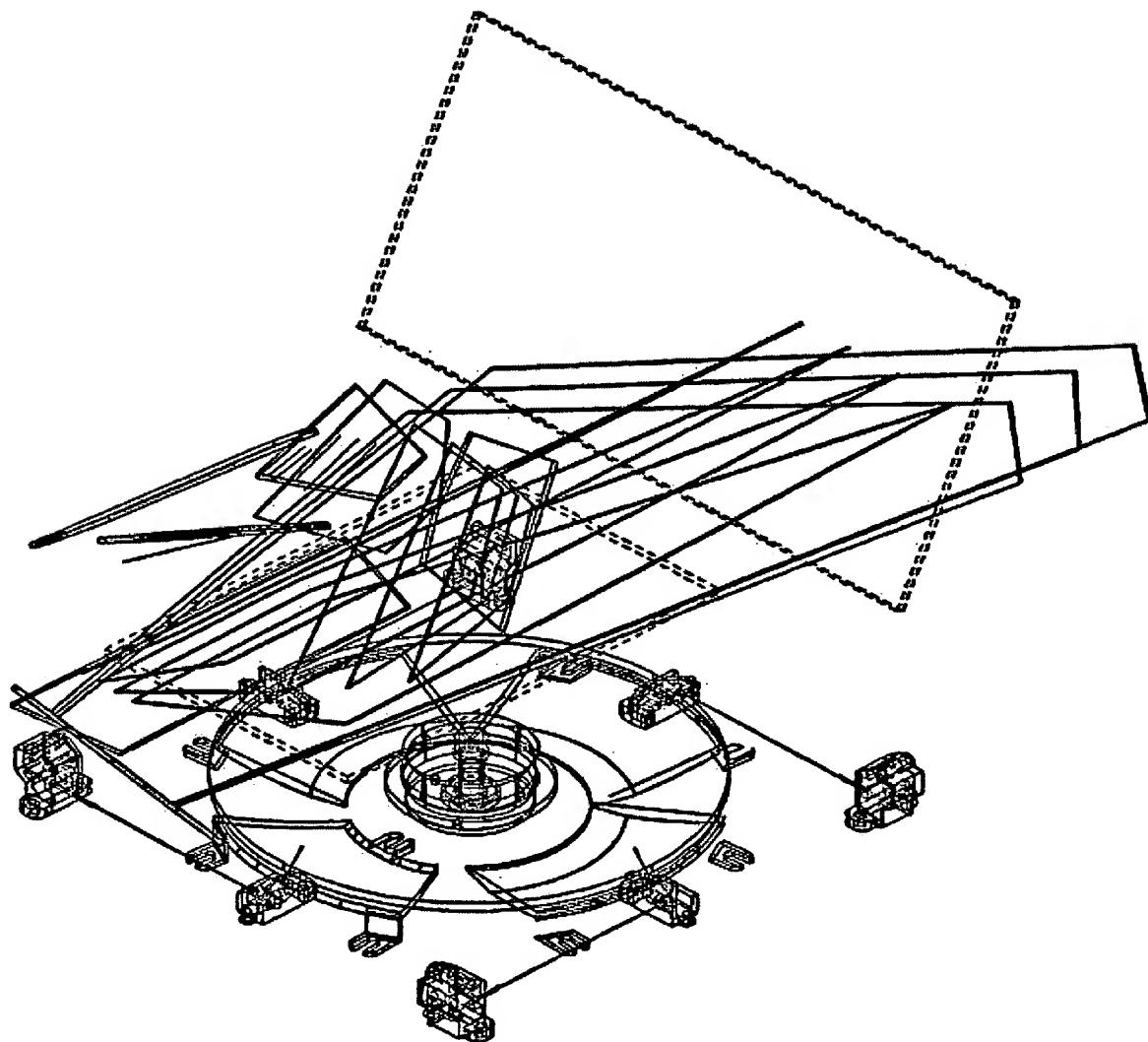
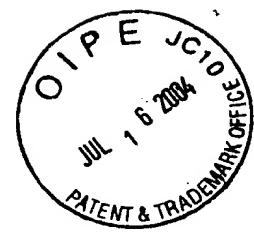


FIG. 5H6

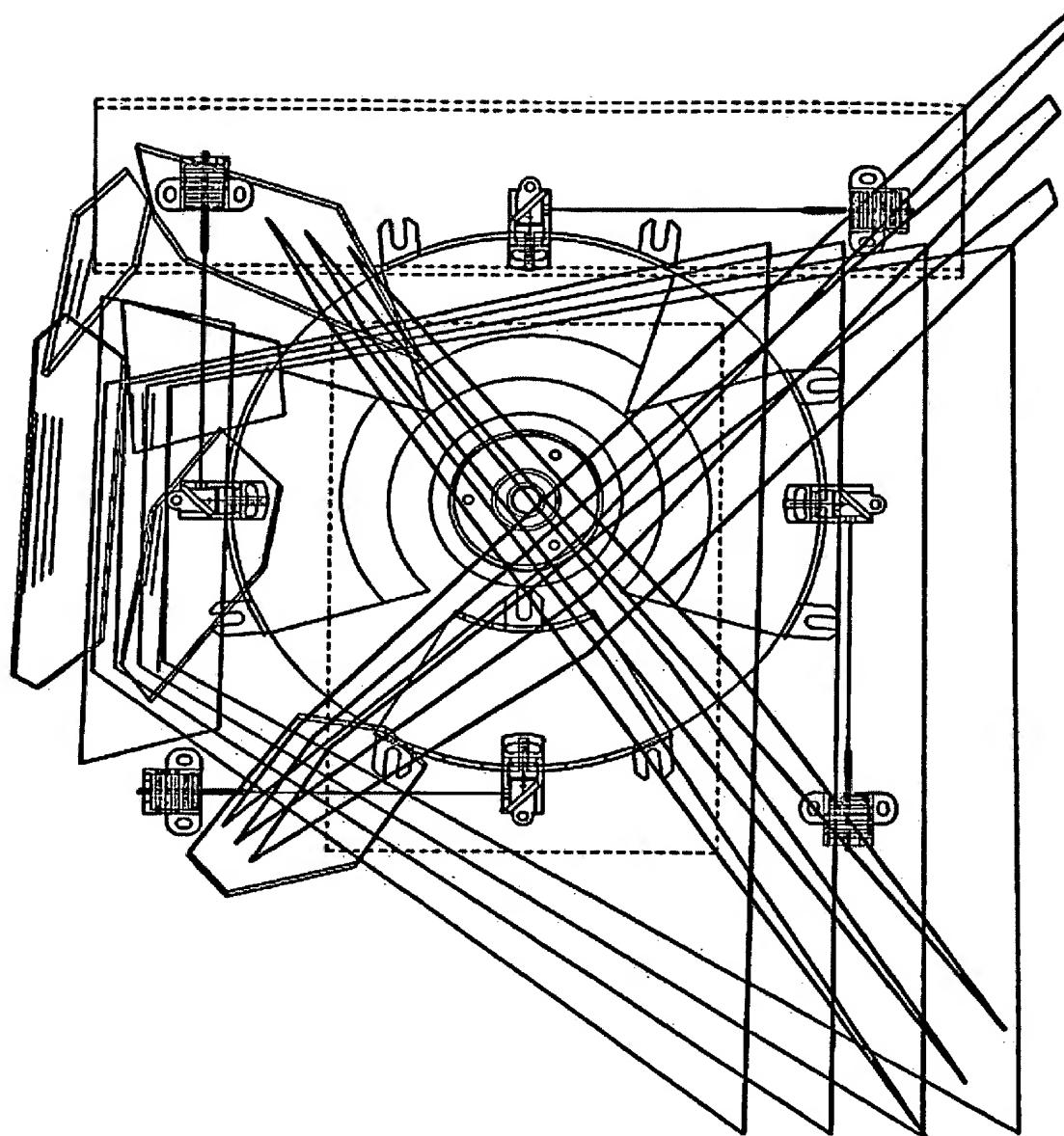
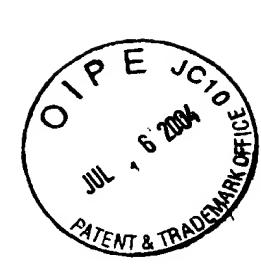


FIG. 5H7

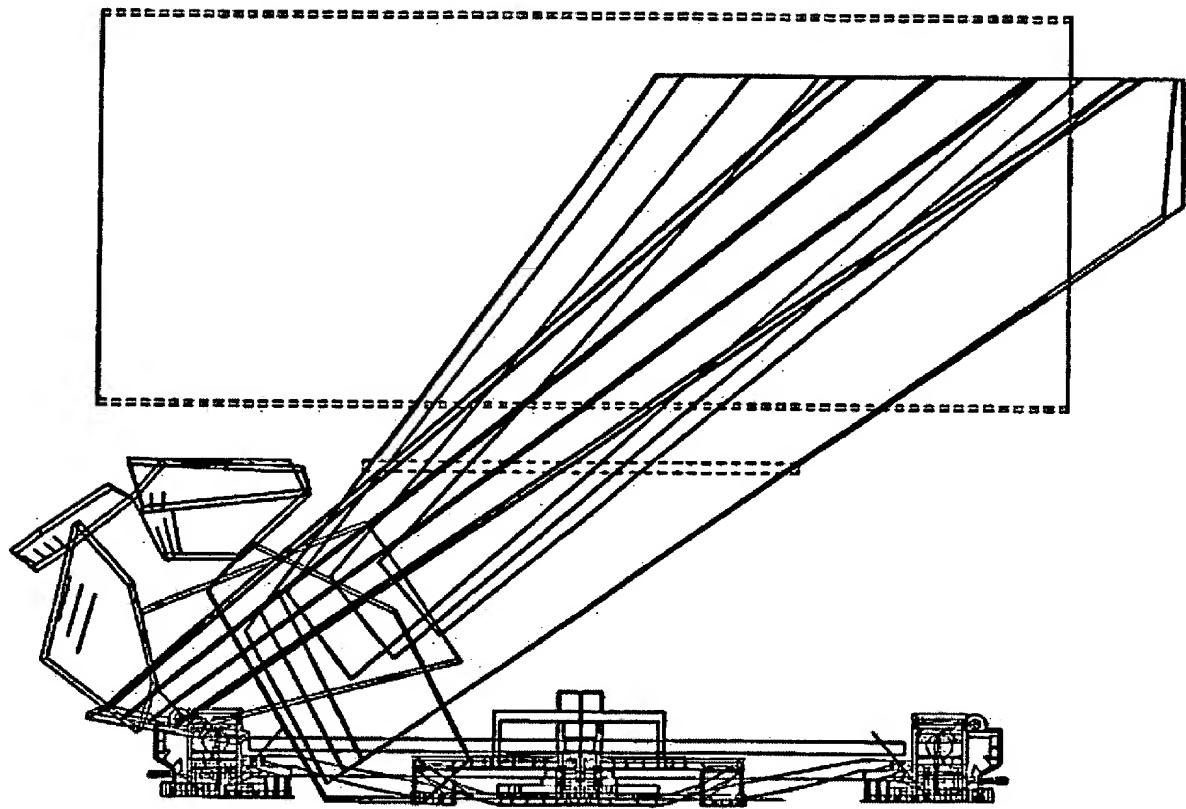
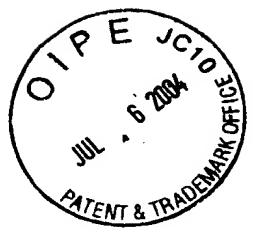
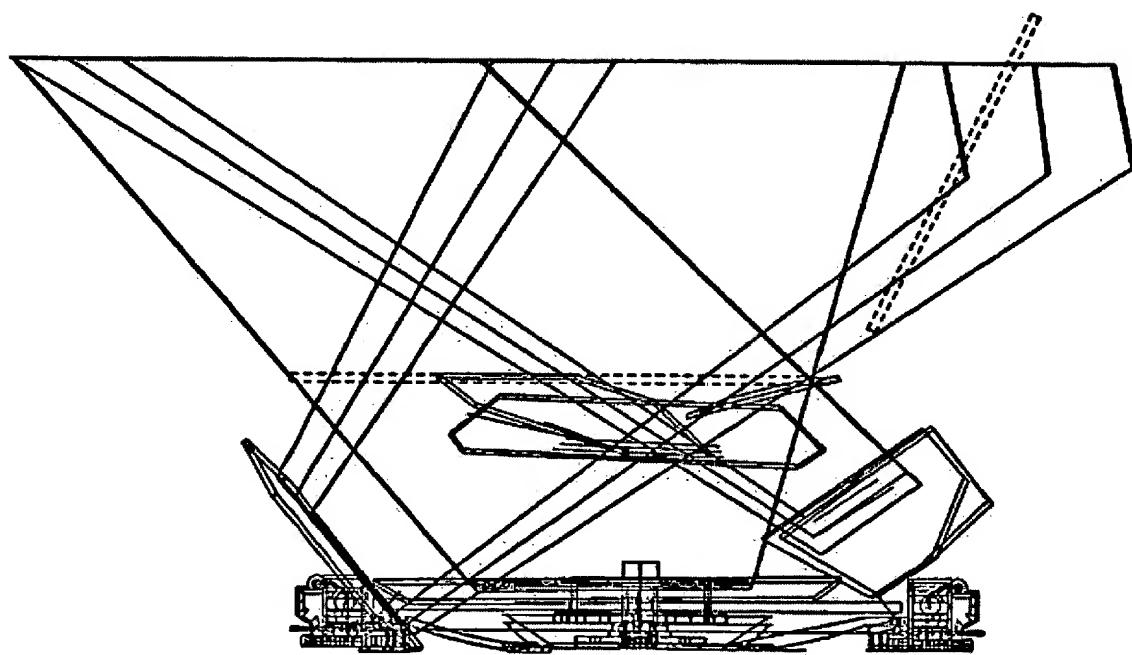
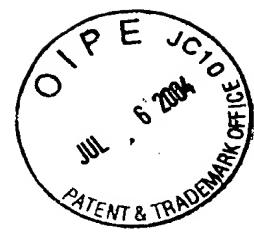


FIG. 5H8



**FIG. 5H9**

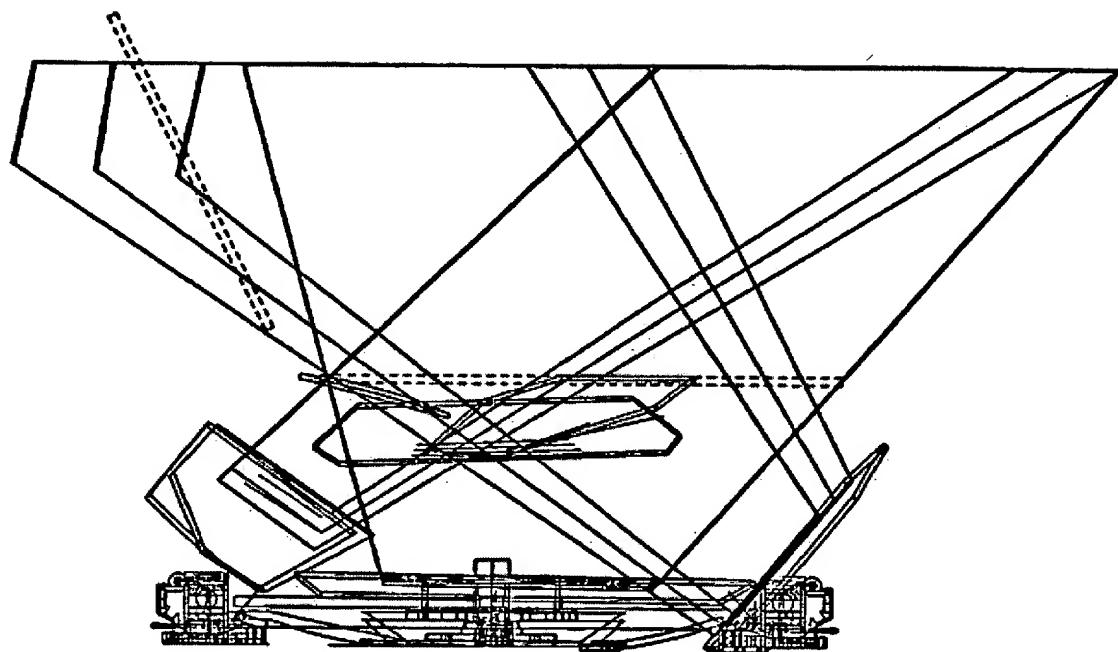
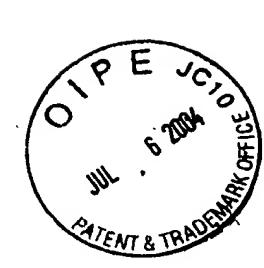


FIG. 5H10

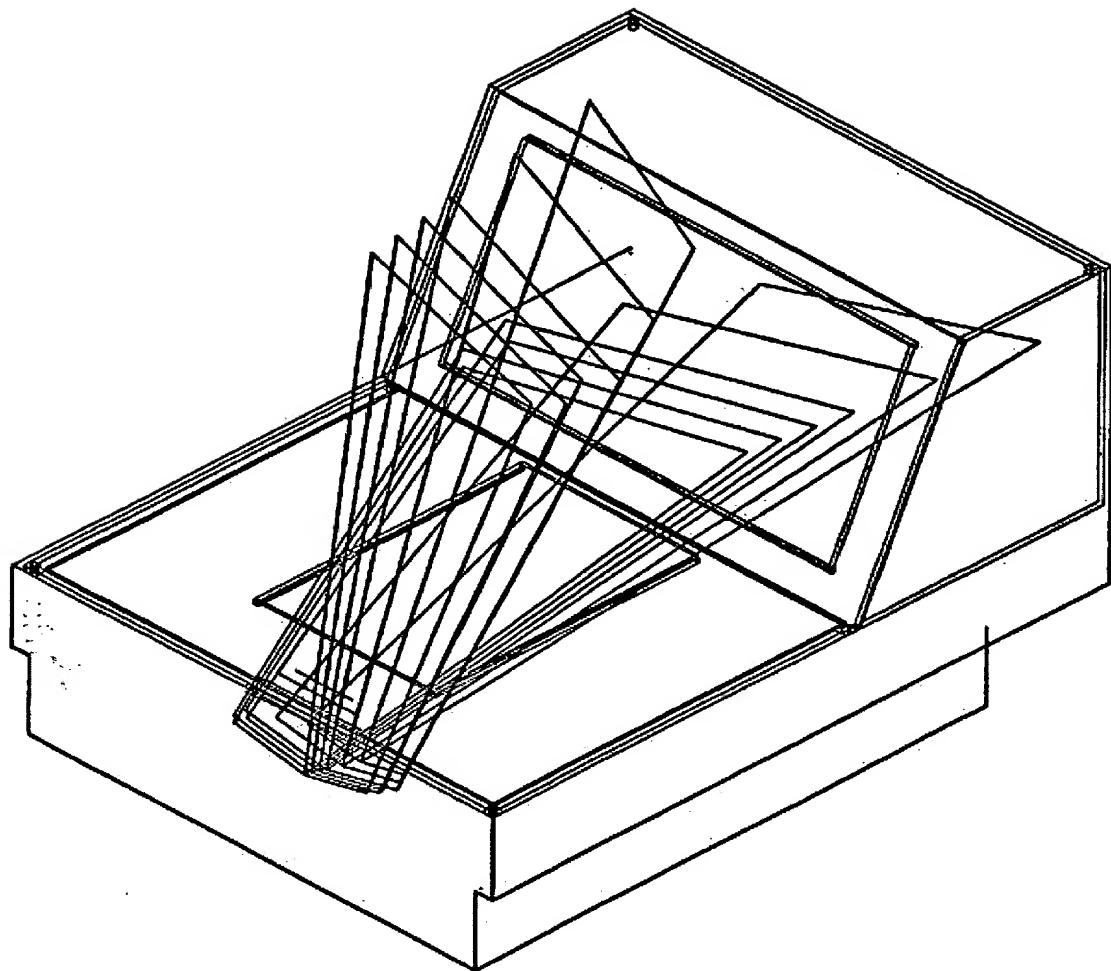
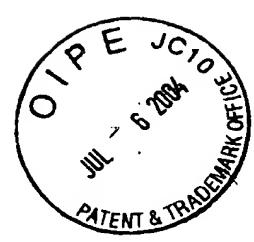


FIG. 5I1

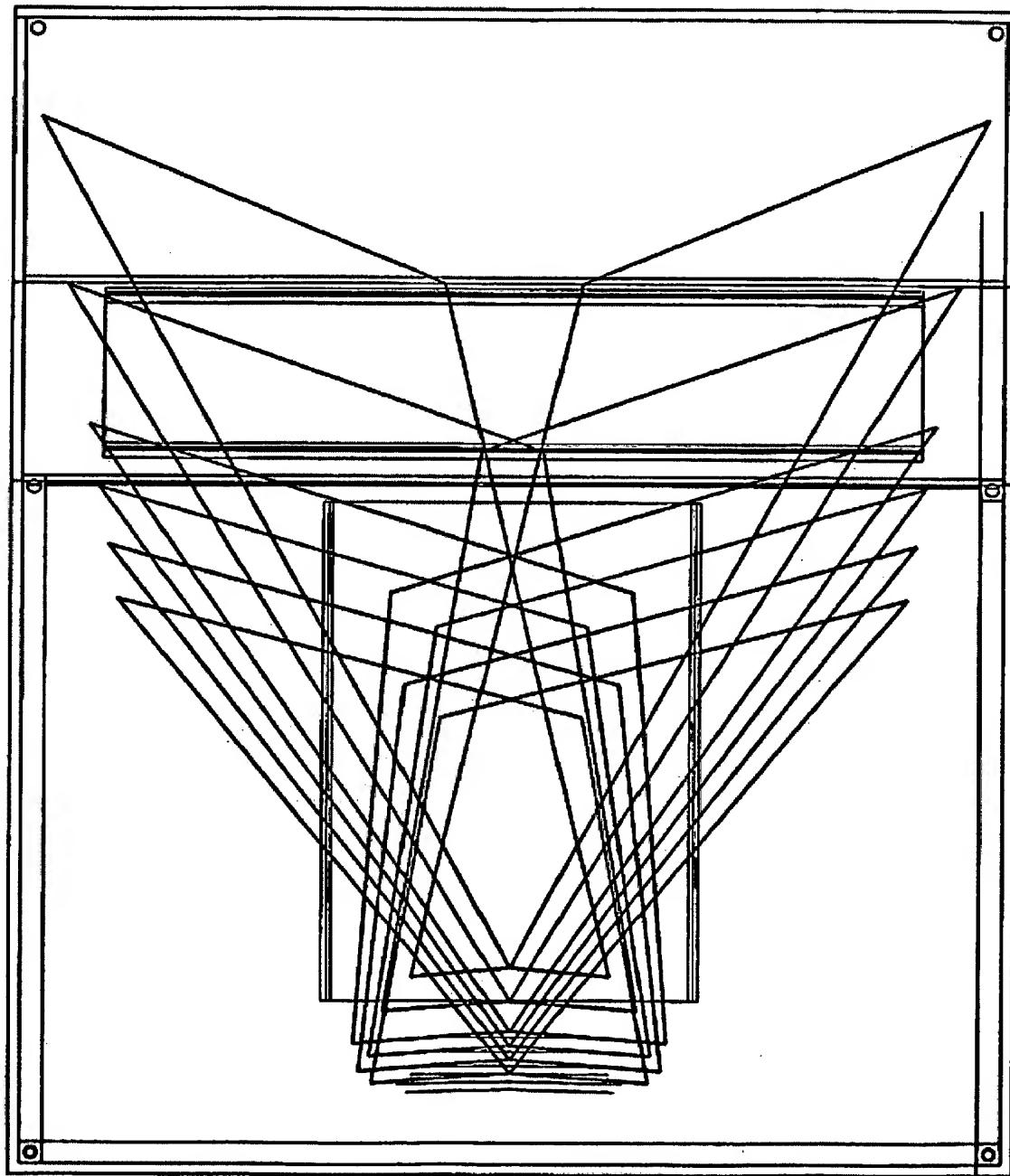


FIG. 5I2

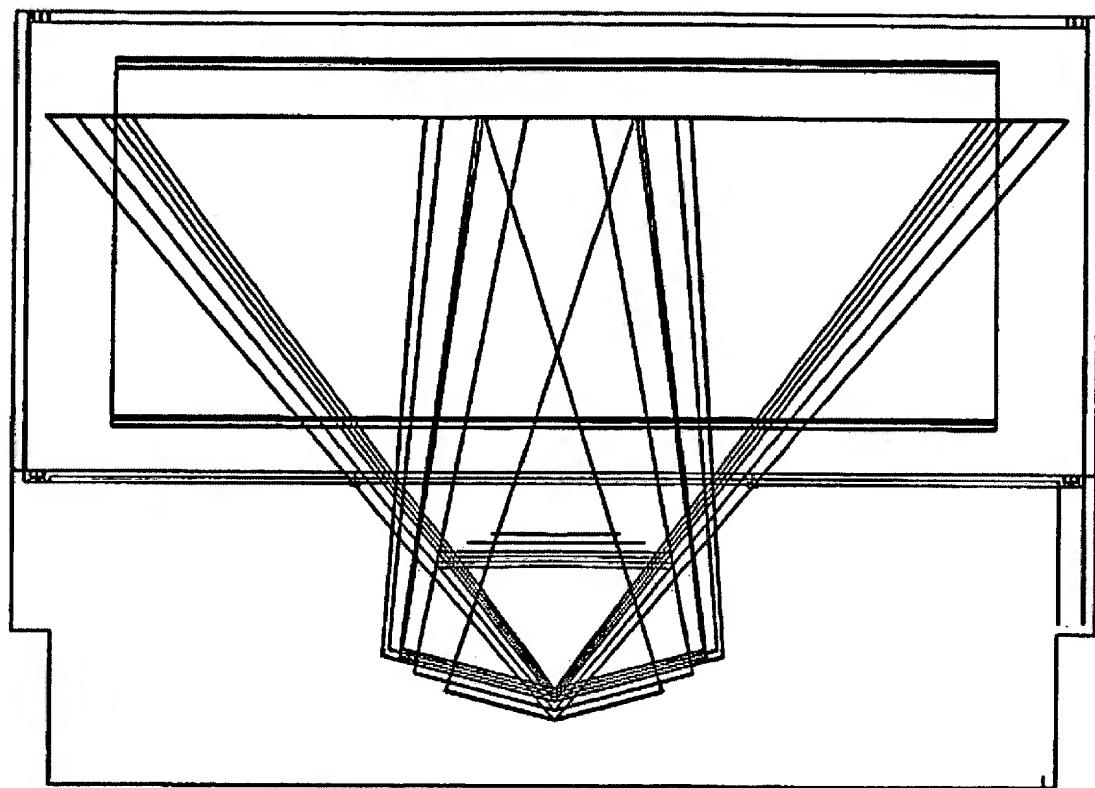
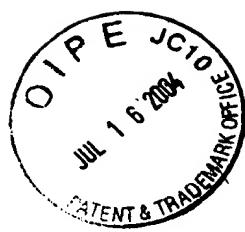


FIG. 5I3

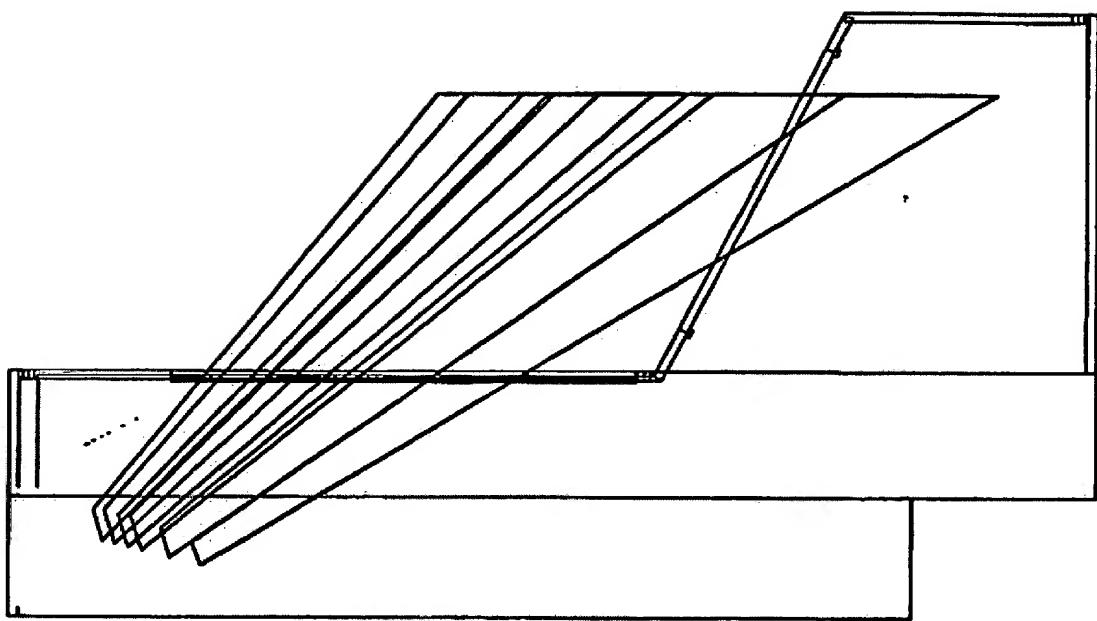
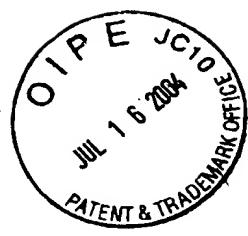
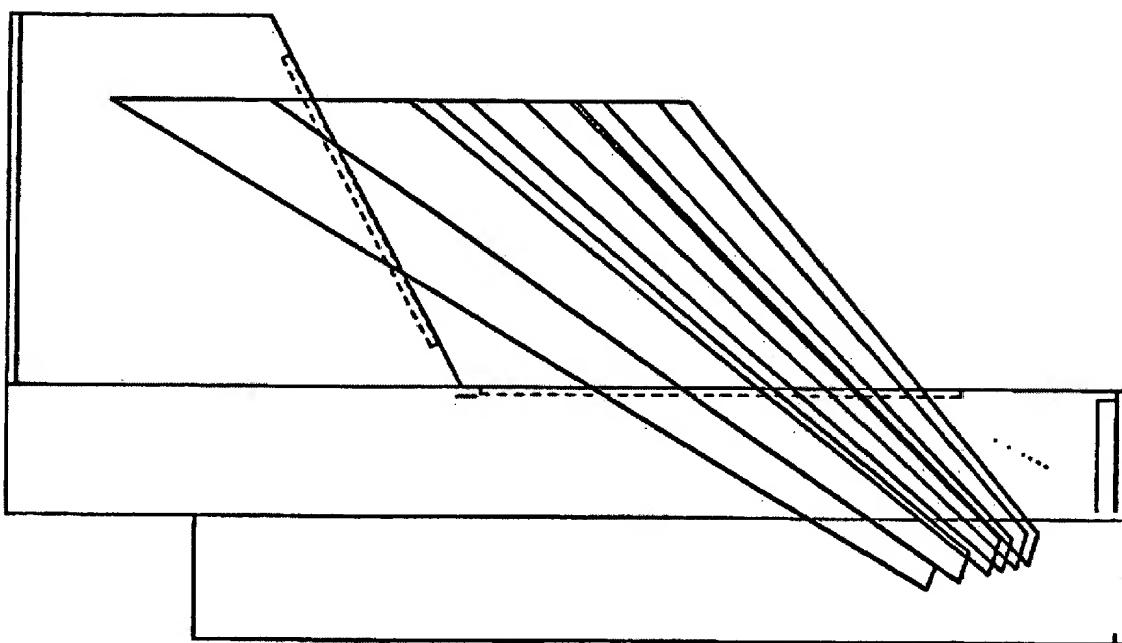
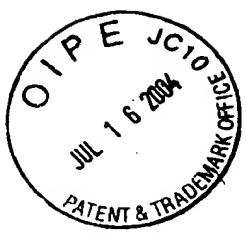


FIG. 5I4



**FIG. 5I5**

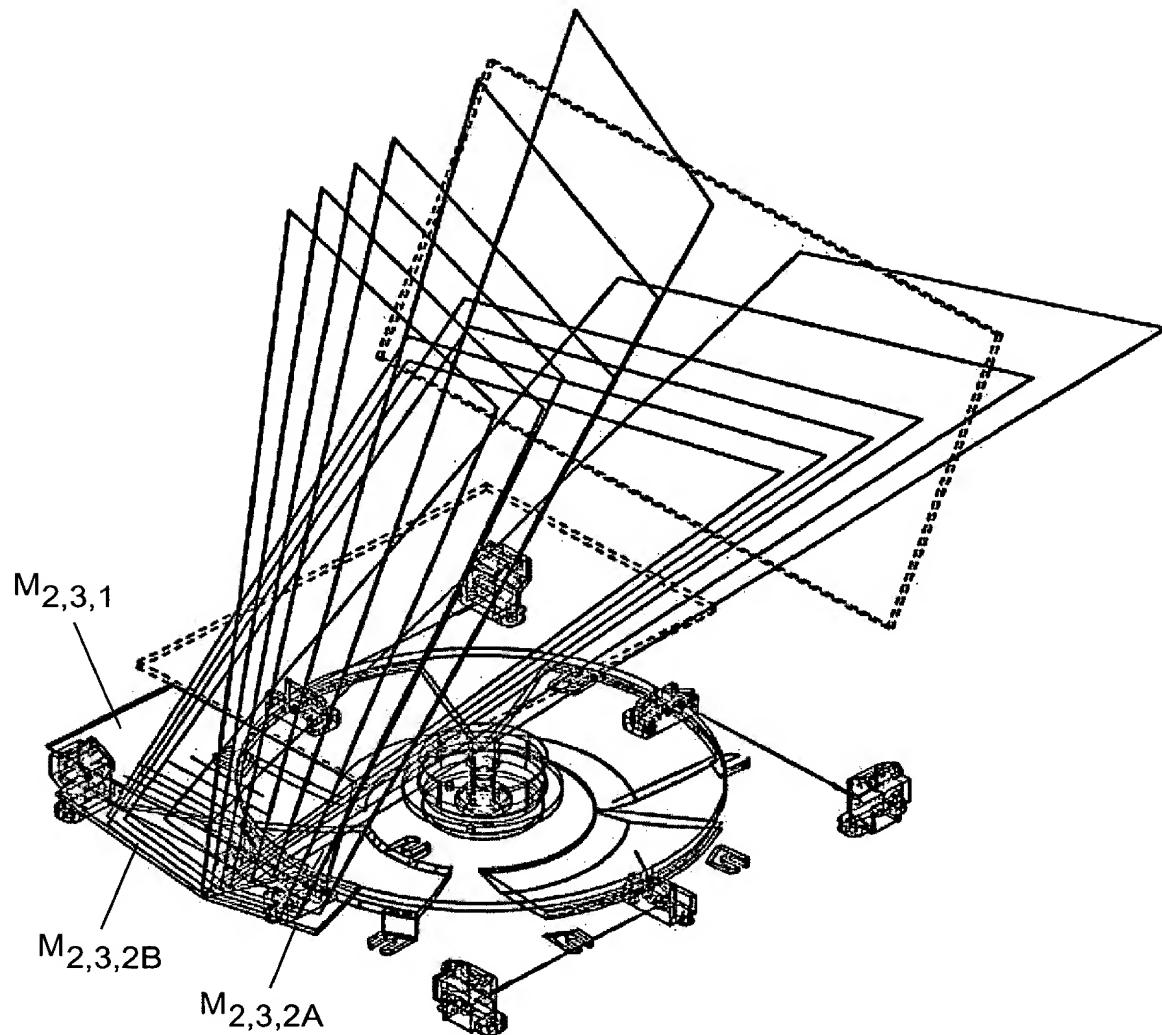
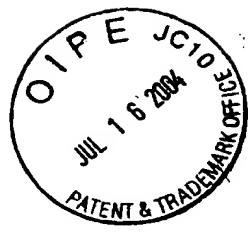


FIG. 5J1

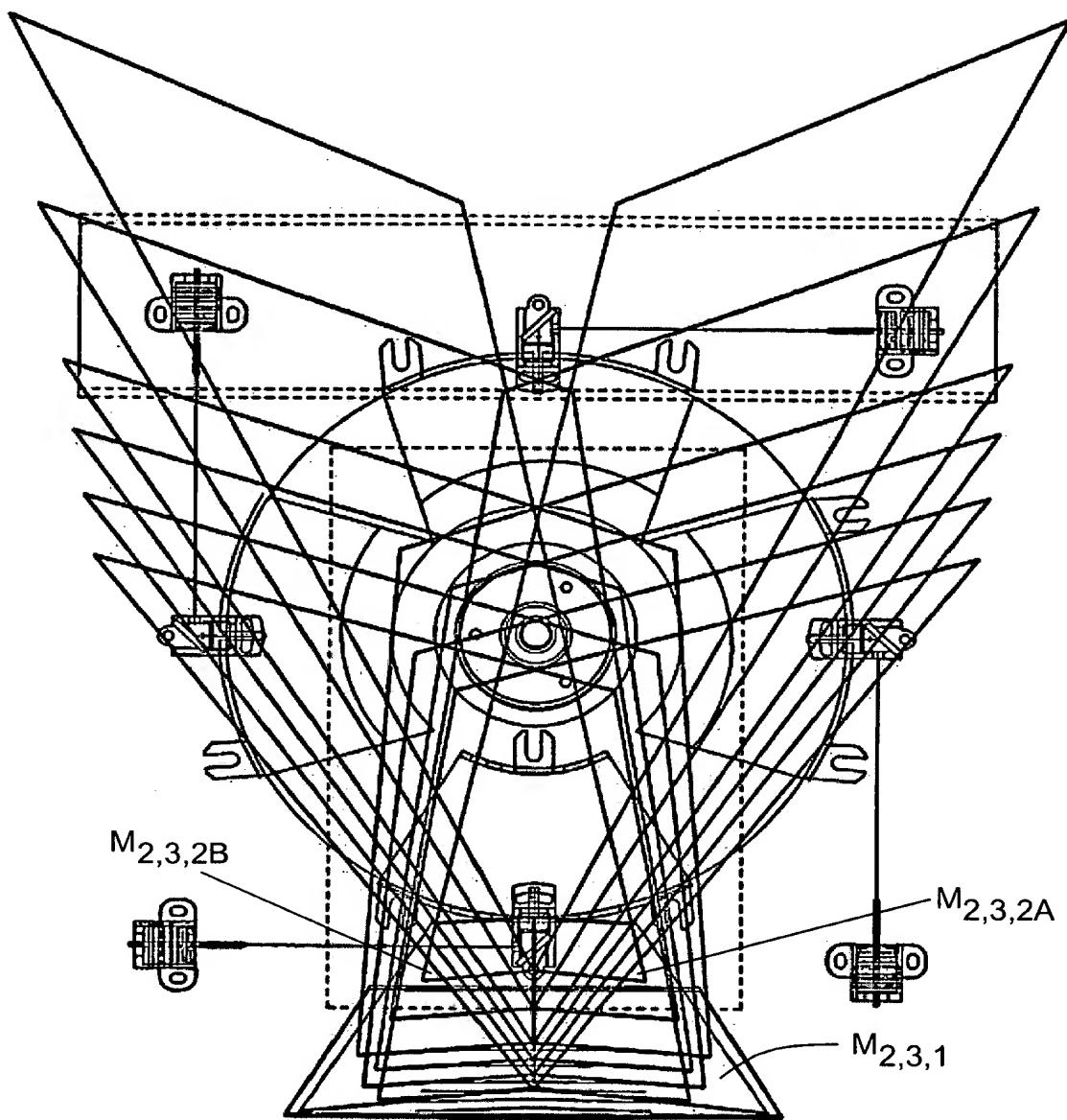


FIG. 5J2

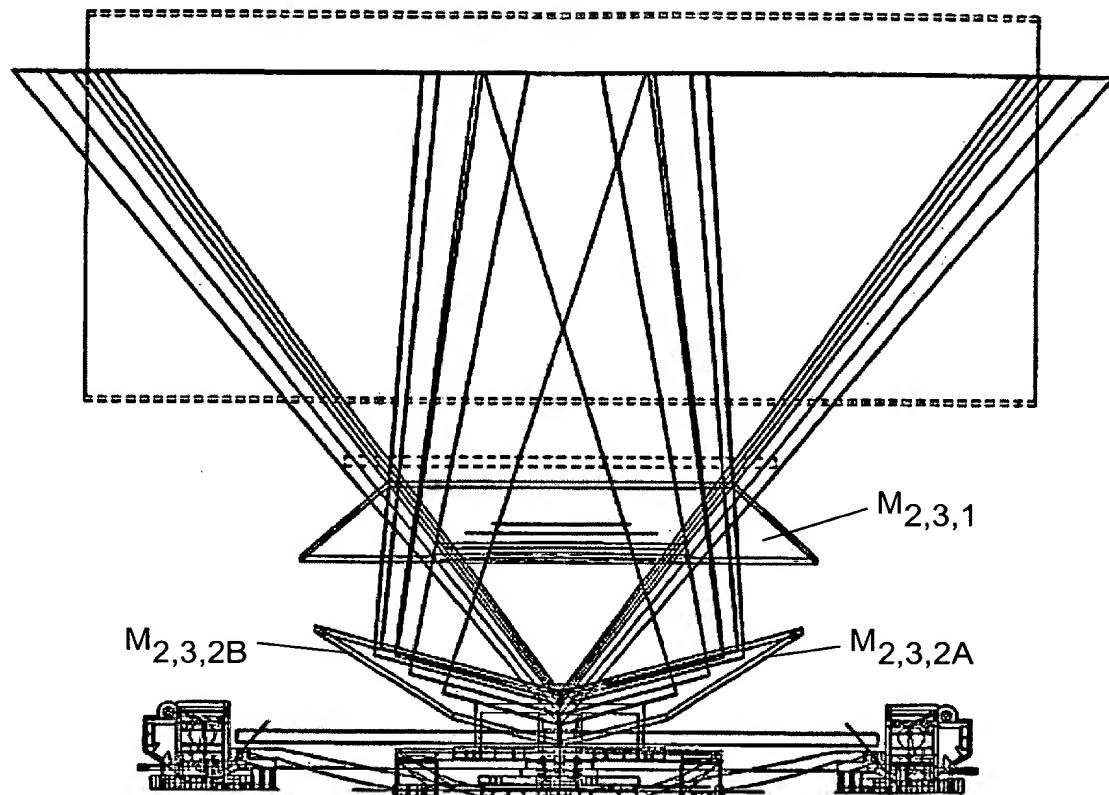


FIG. 5J3

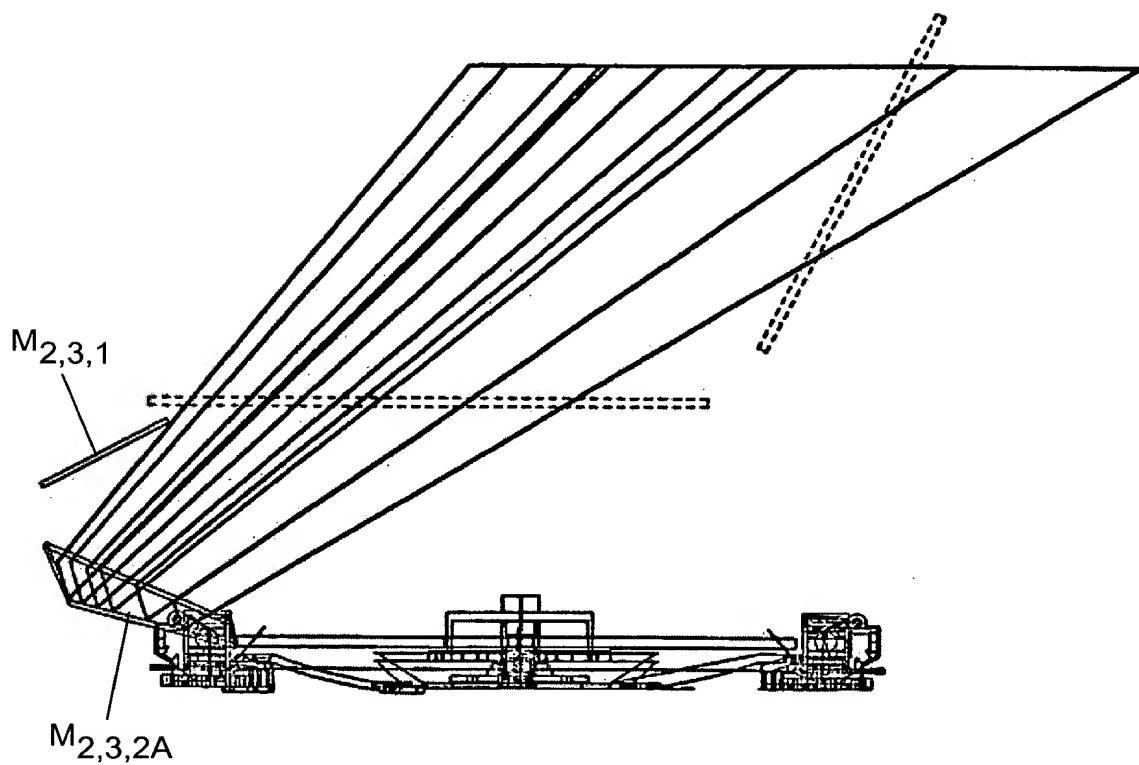


FIG. 5J4

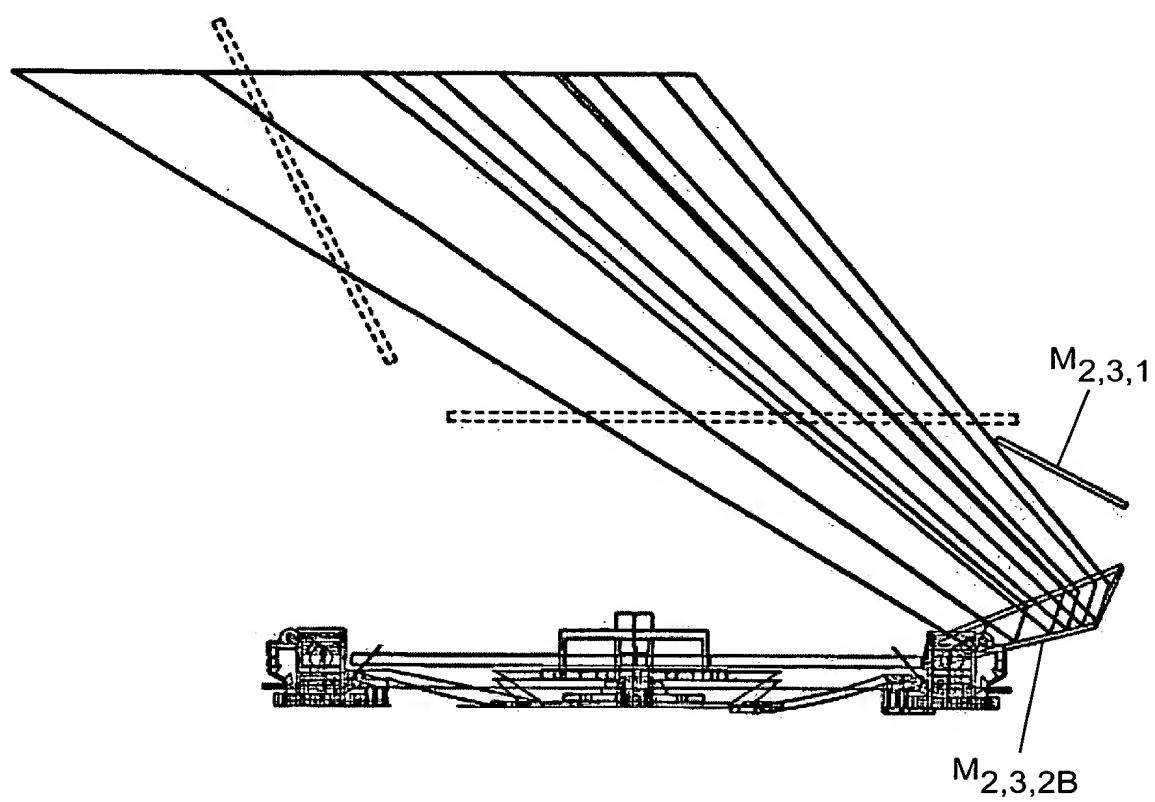
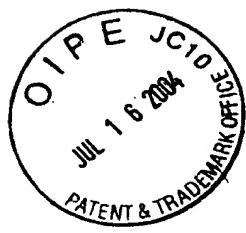


FIG. 5J5

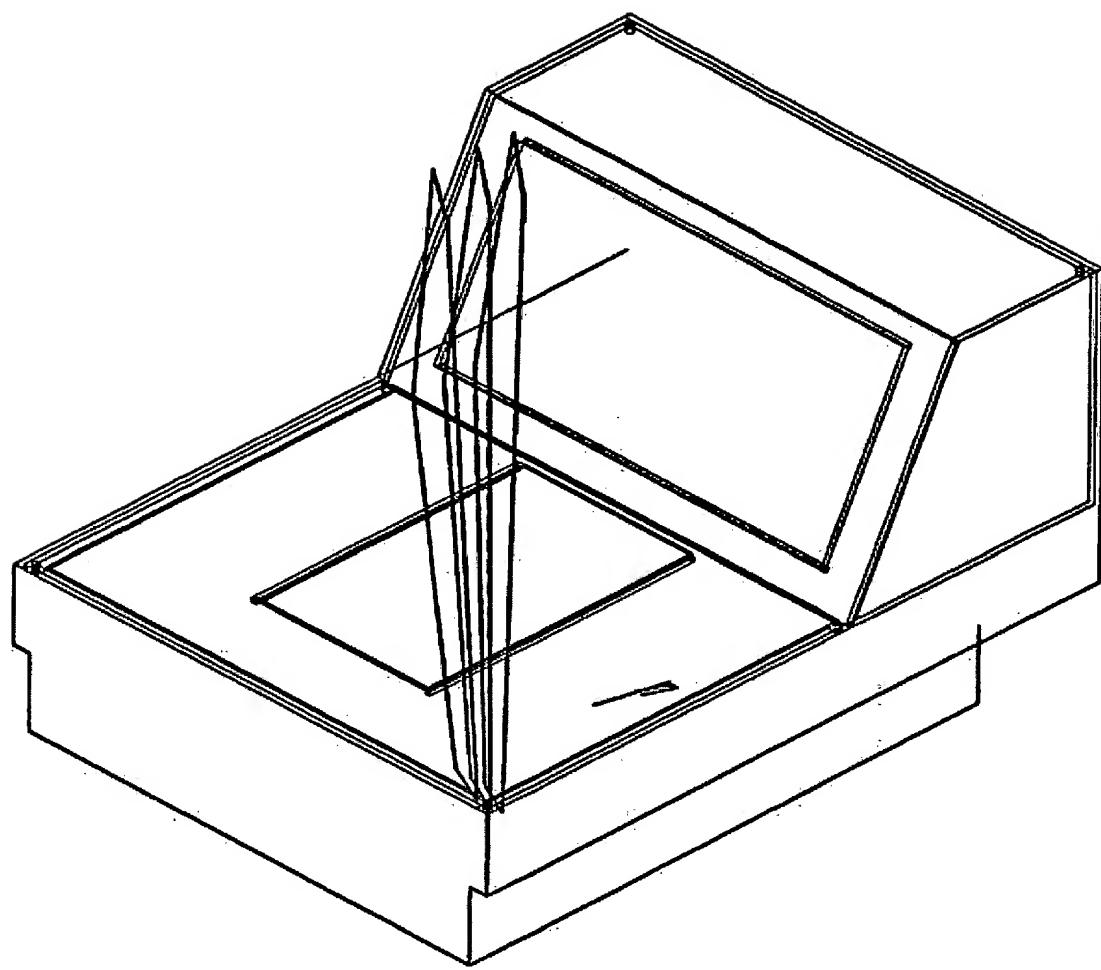
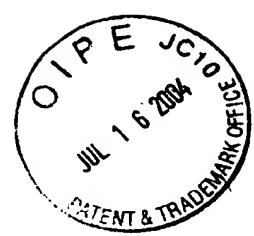


FIG. 5K1

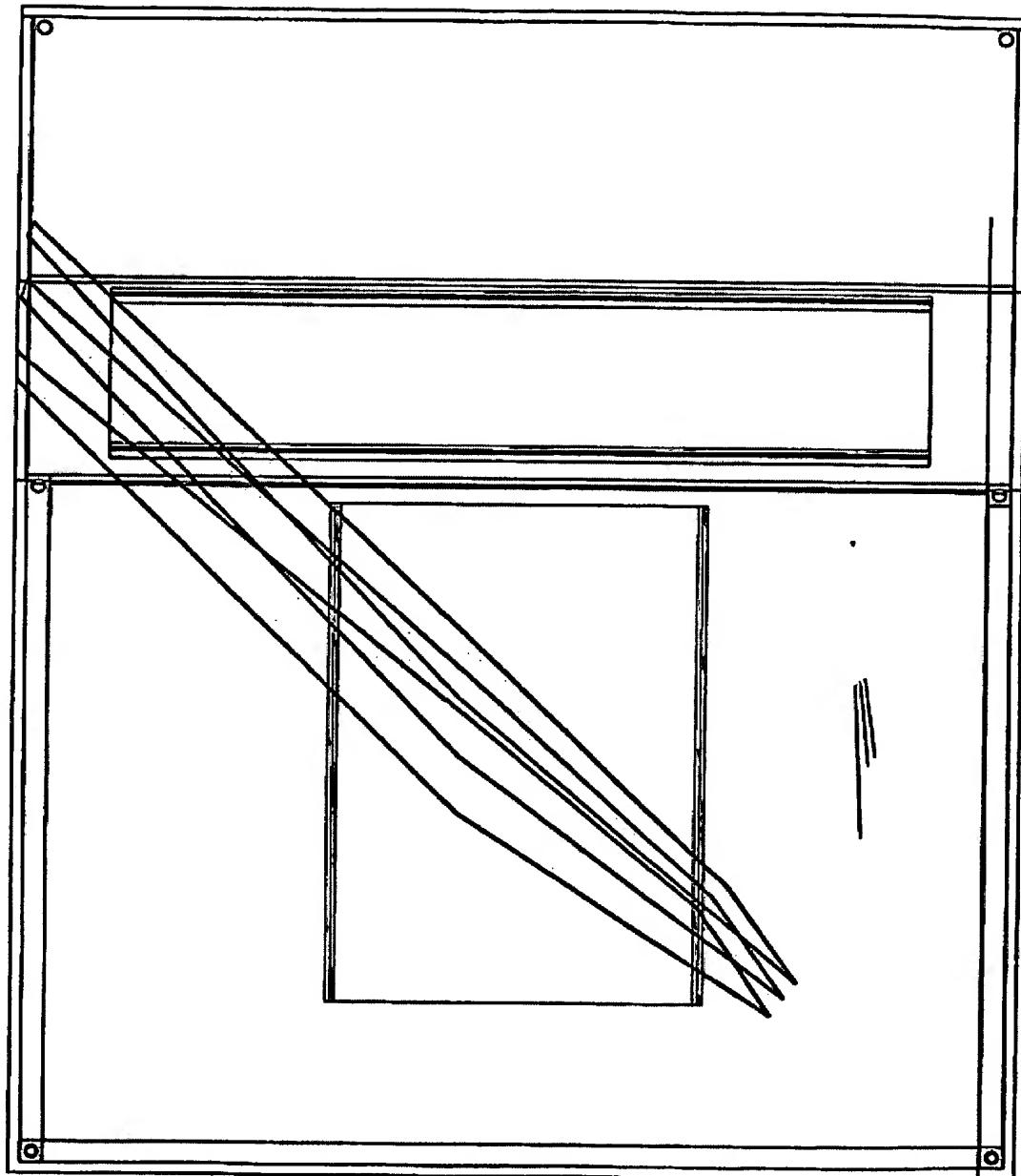


FIG. 5K2

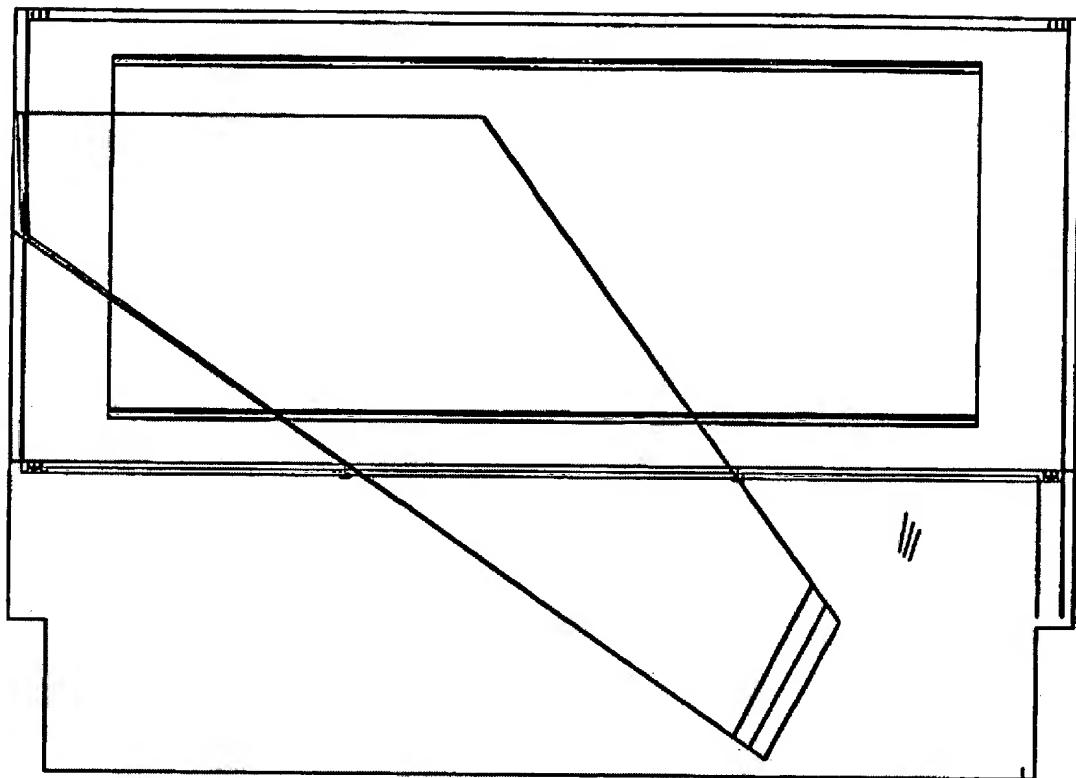


FIG. 5K3

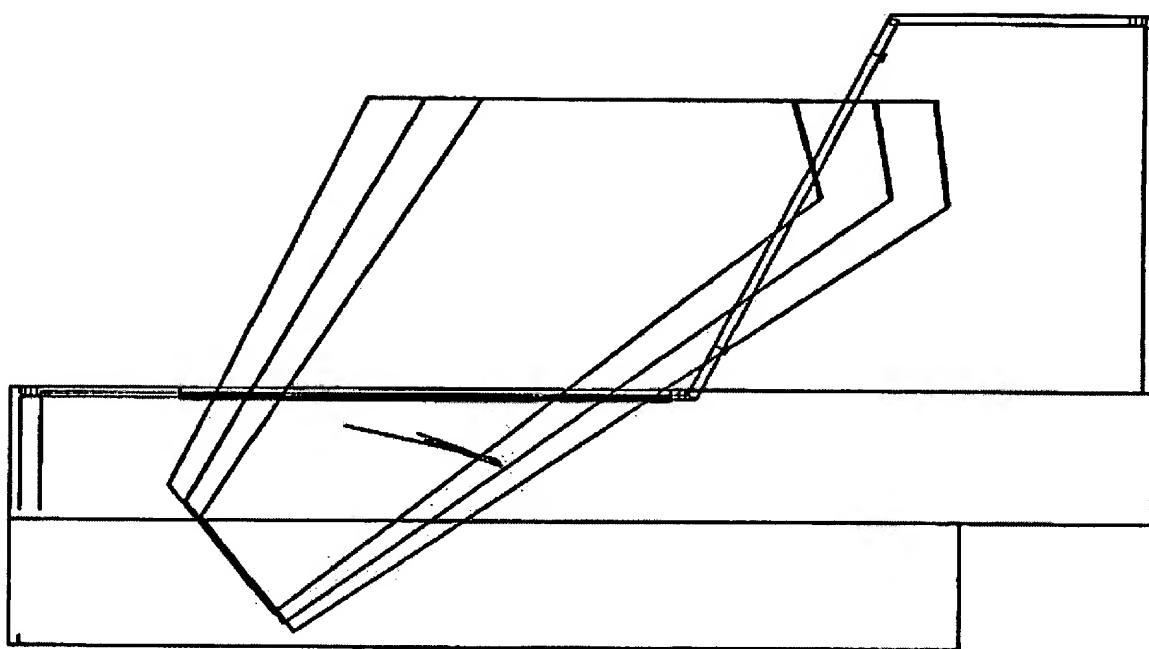


FIG. 5K4

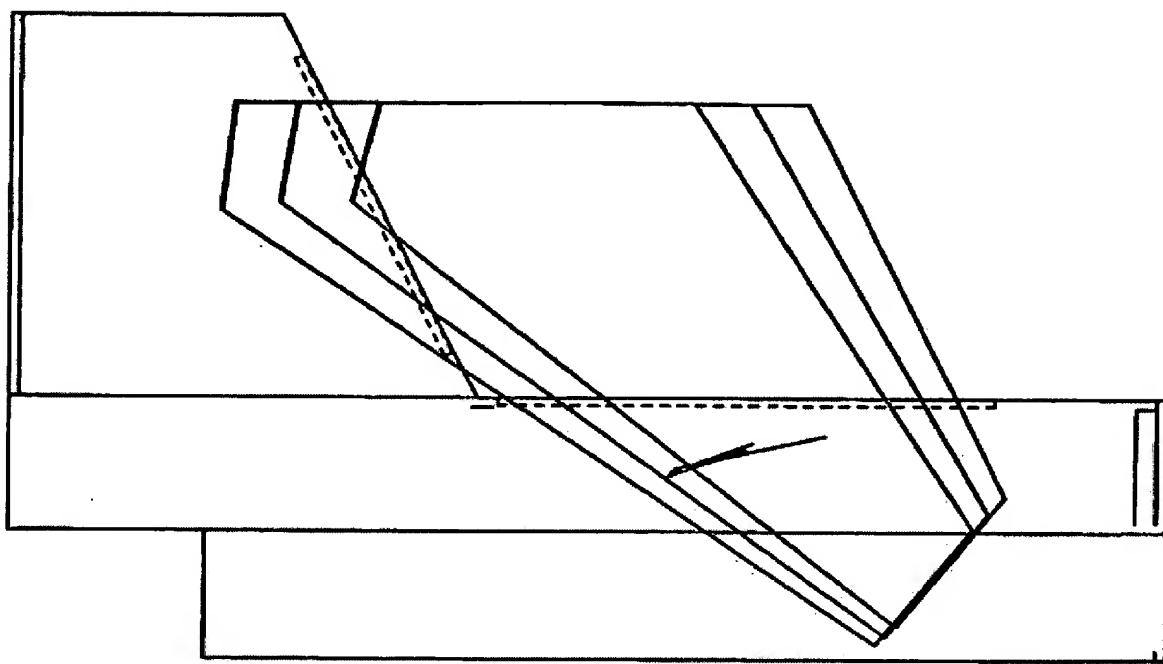
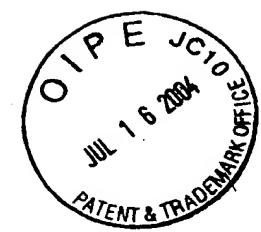


FIG. 5K5

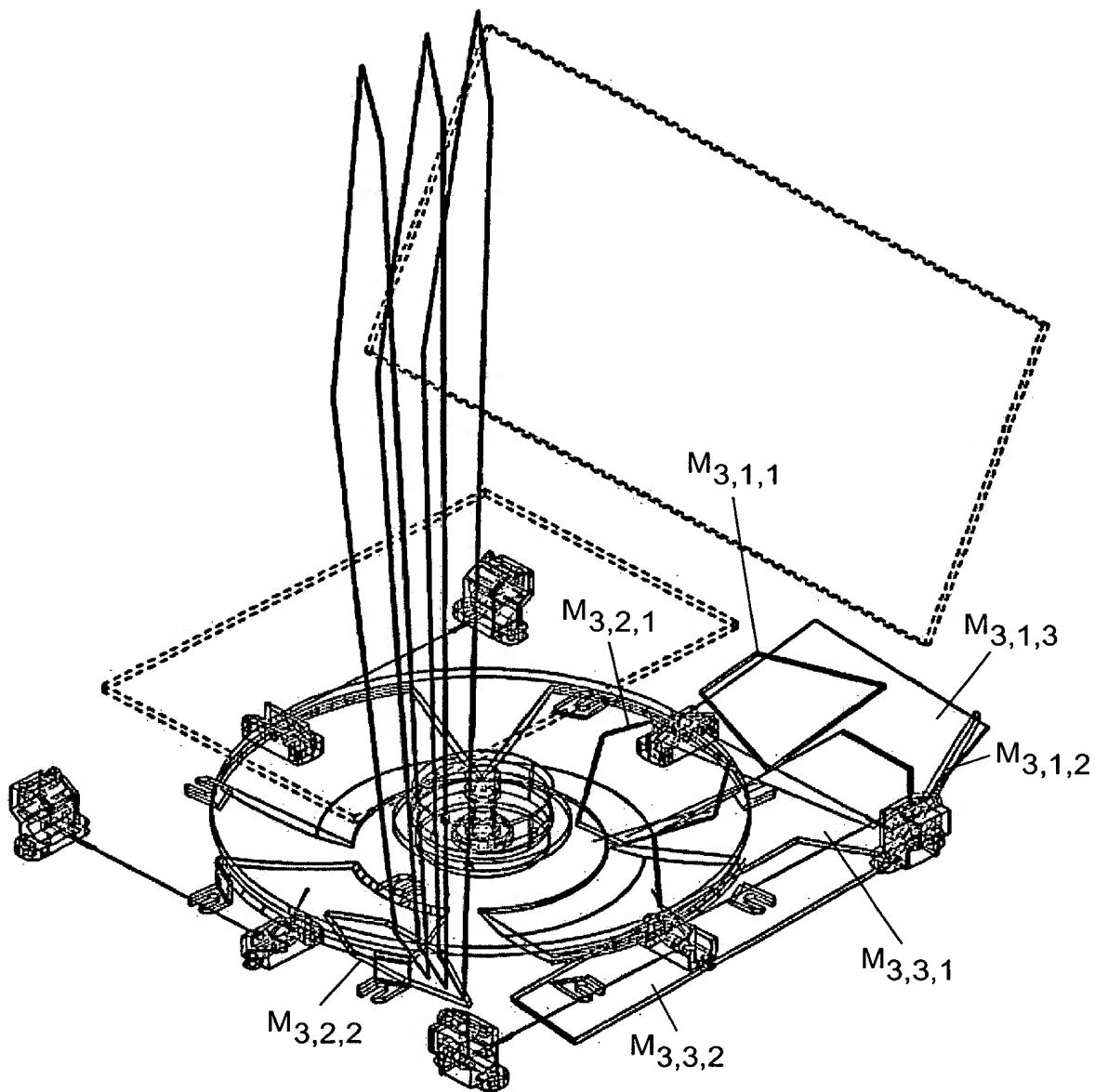


FIG. 5L1

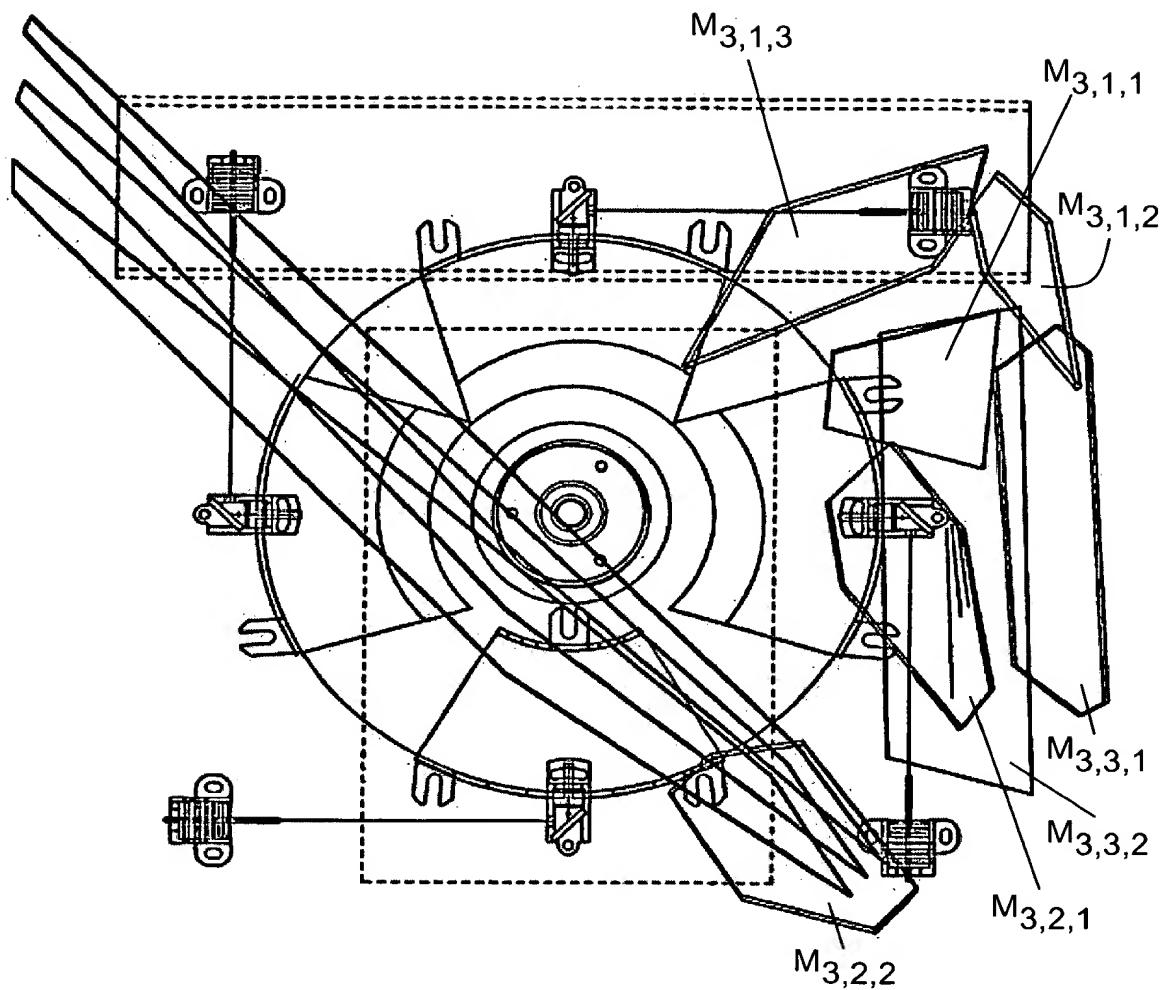


FIG. 5L2

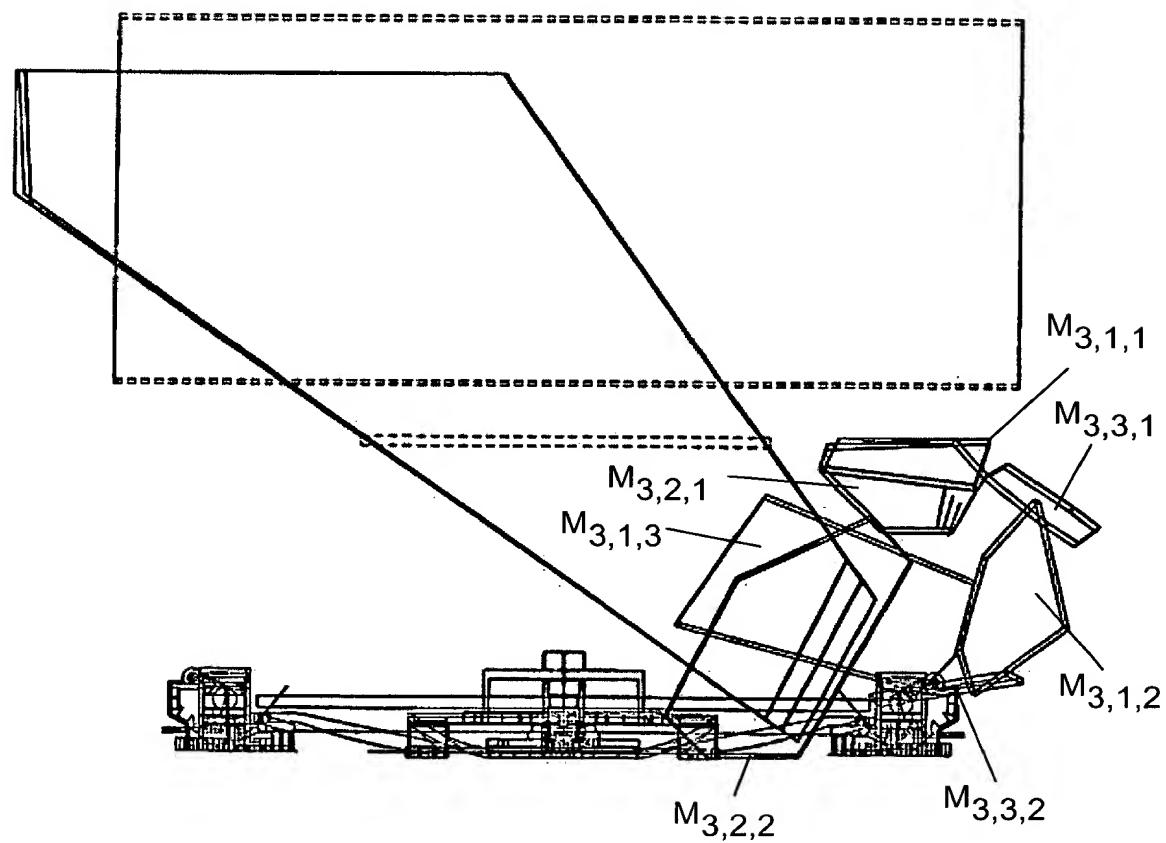


FIG. 5L3

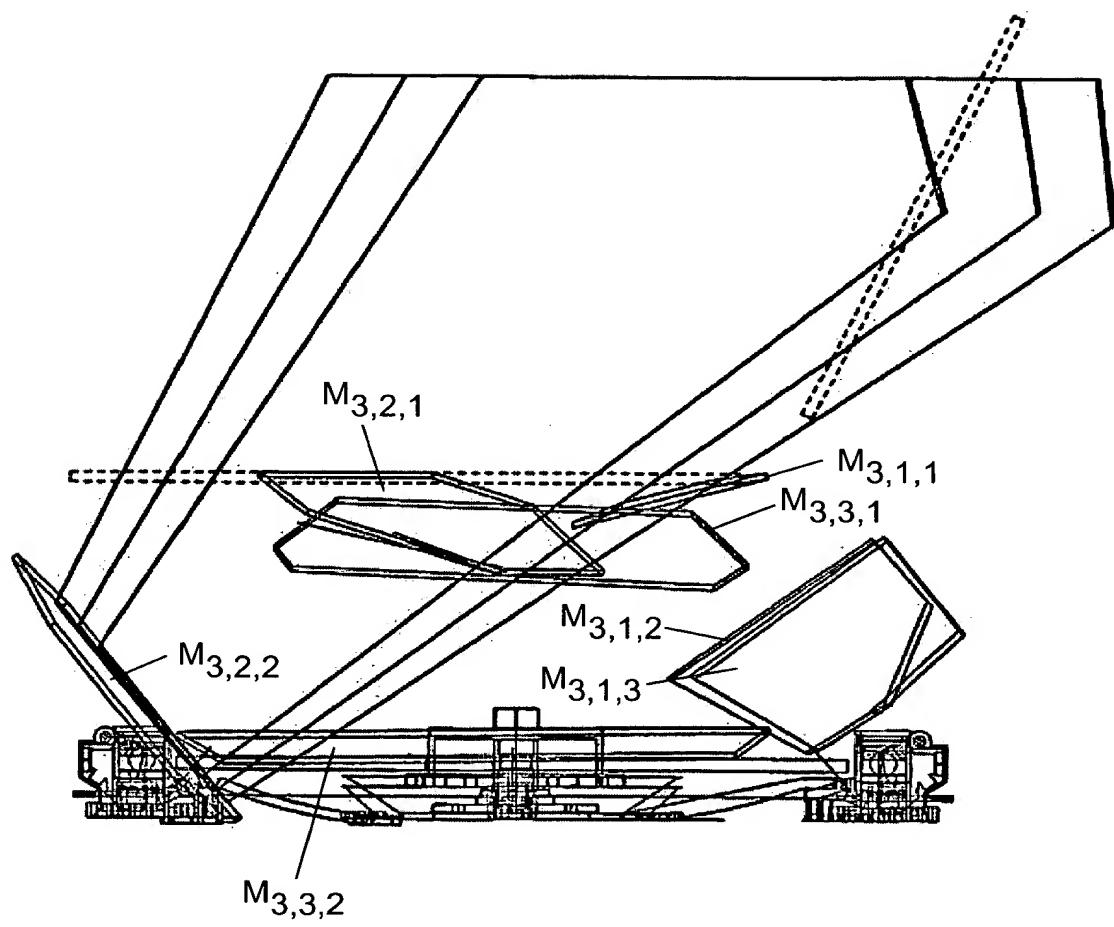


FIG. 5L4

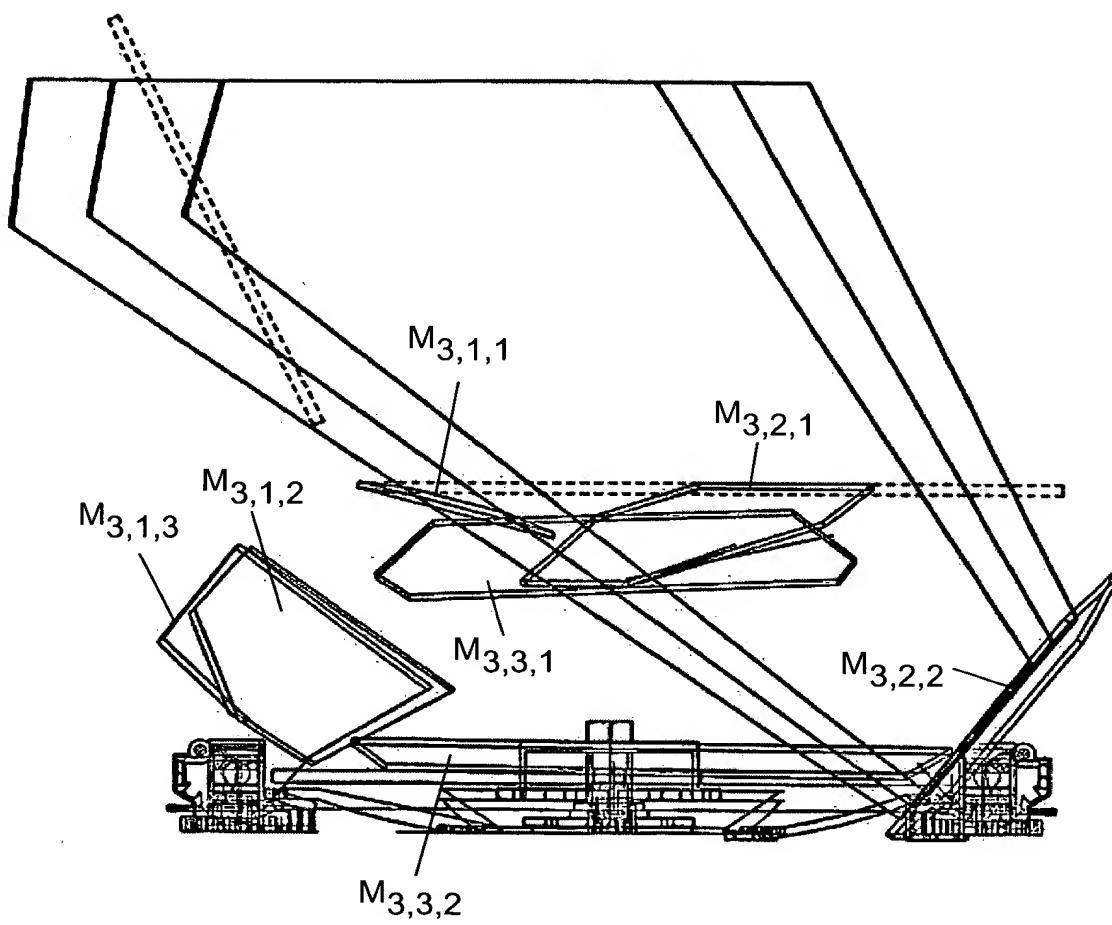


FIG. 5L5

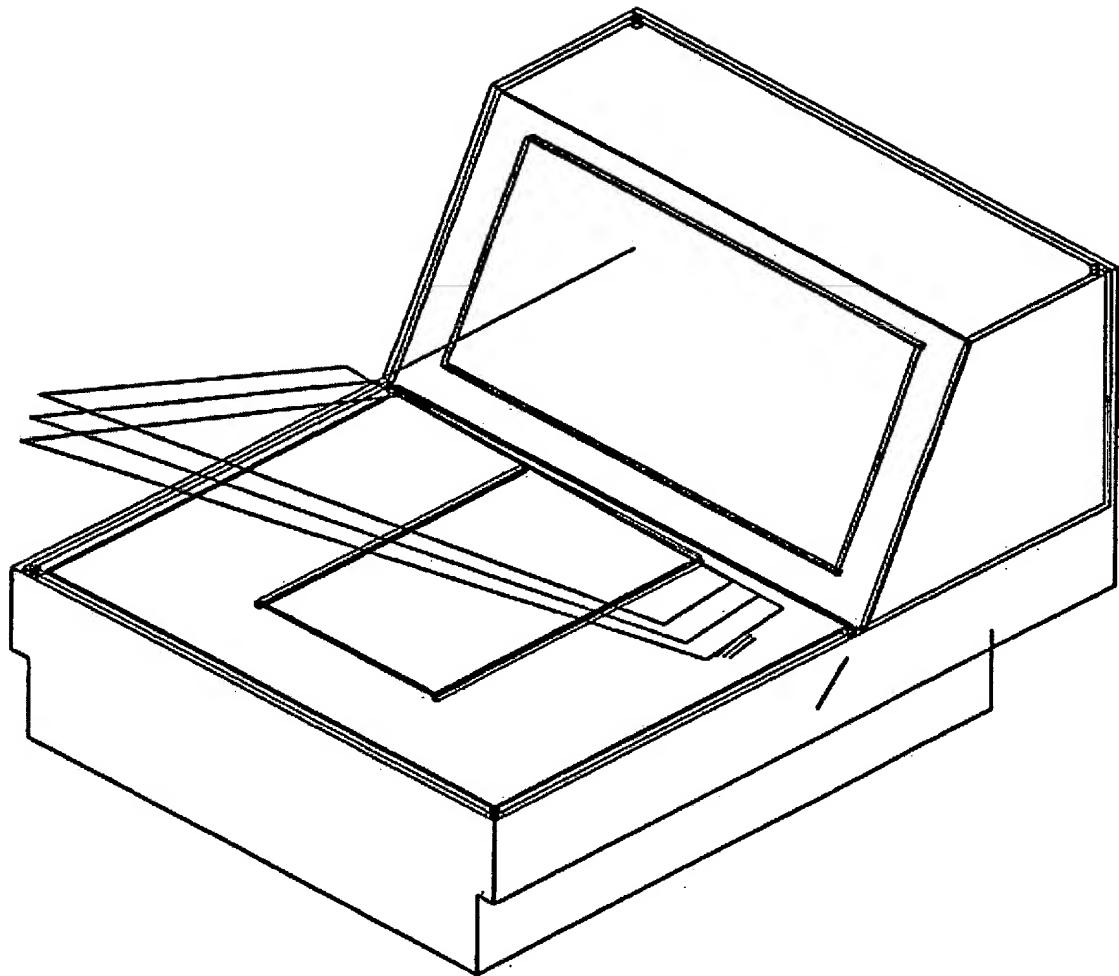


FIG. 5M1

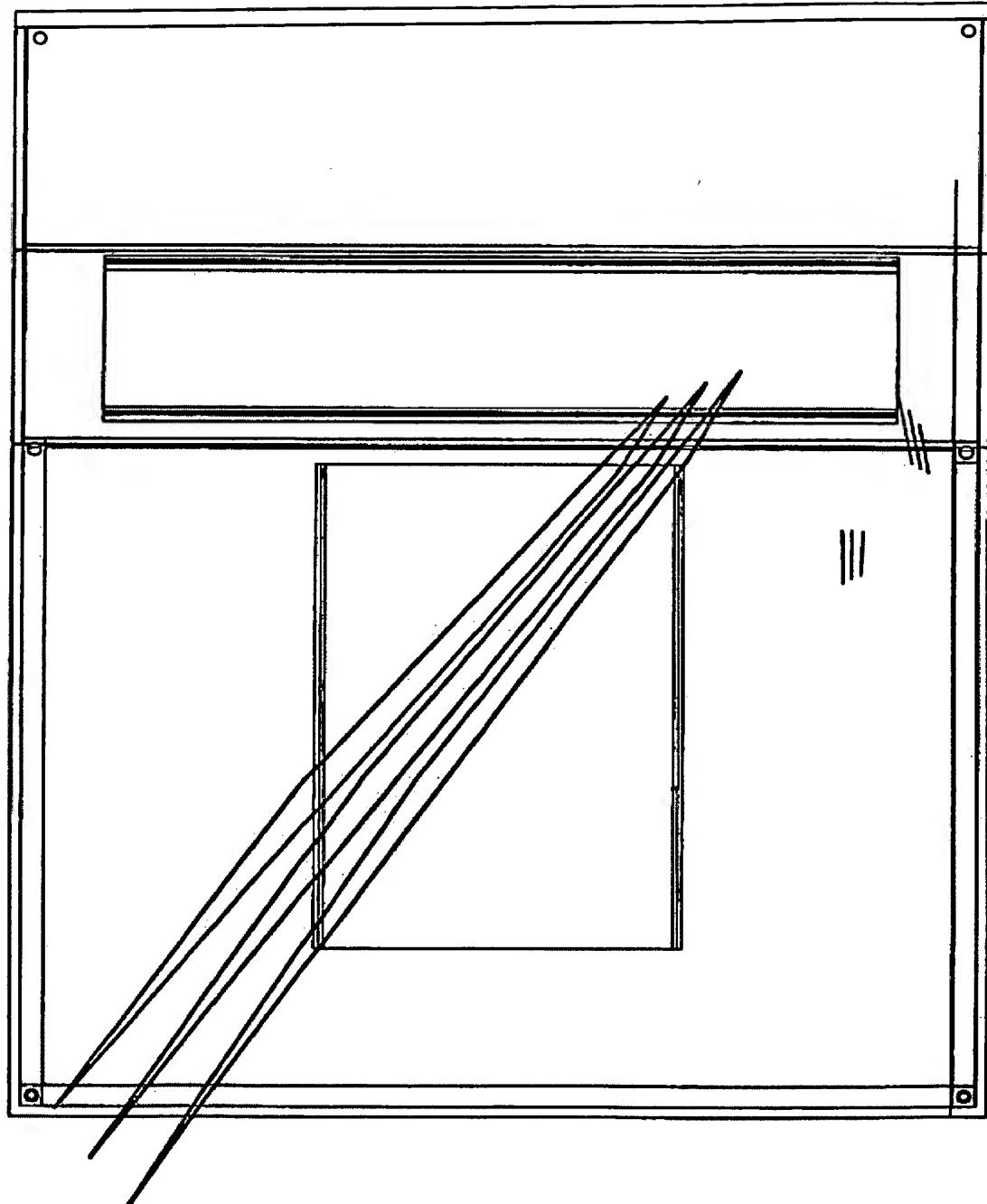
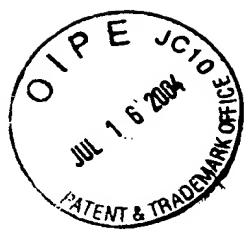


FIG. 5M2

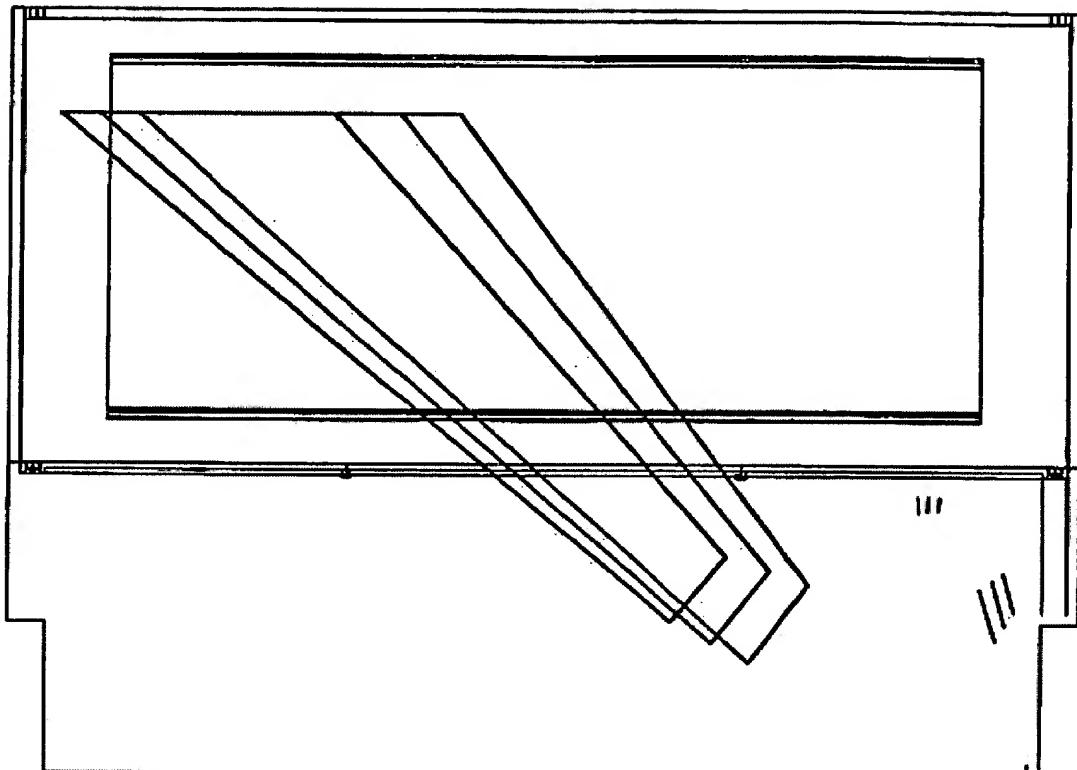
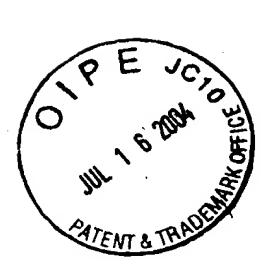


FIG. 5M3

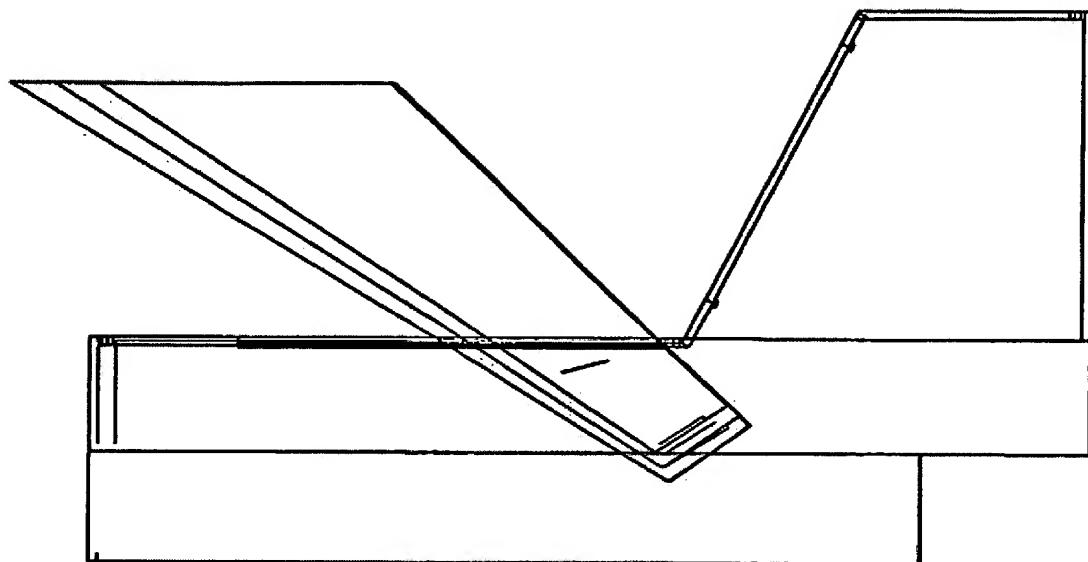
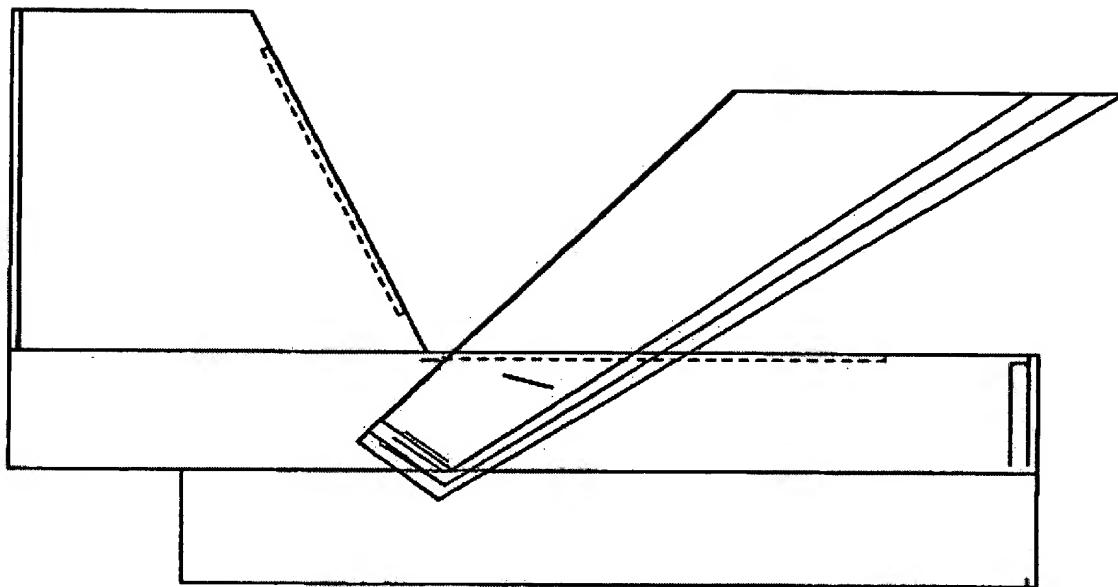
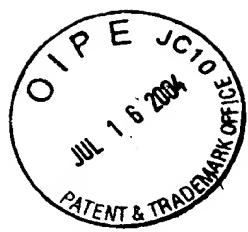


FIG. 5M4



**FIG. 5M5**

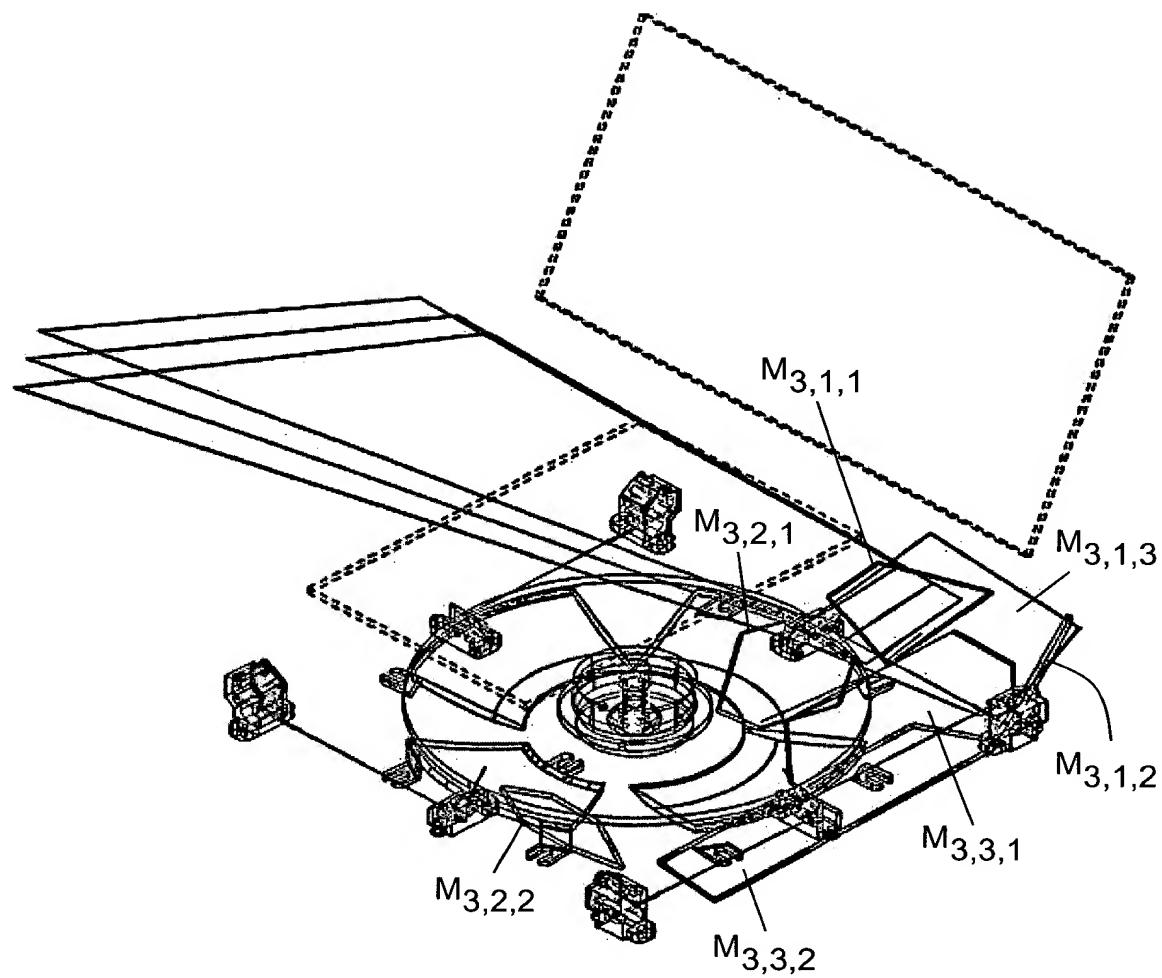
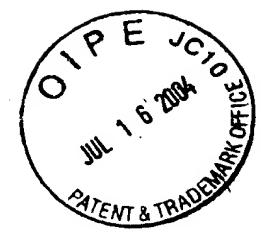


FIG. 5N1

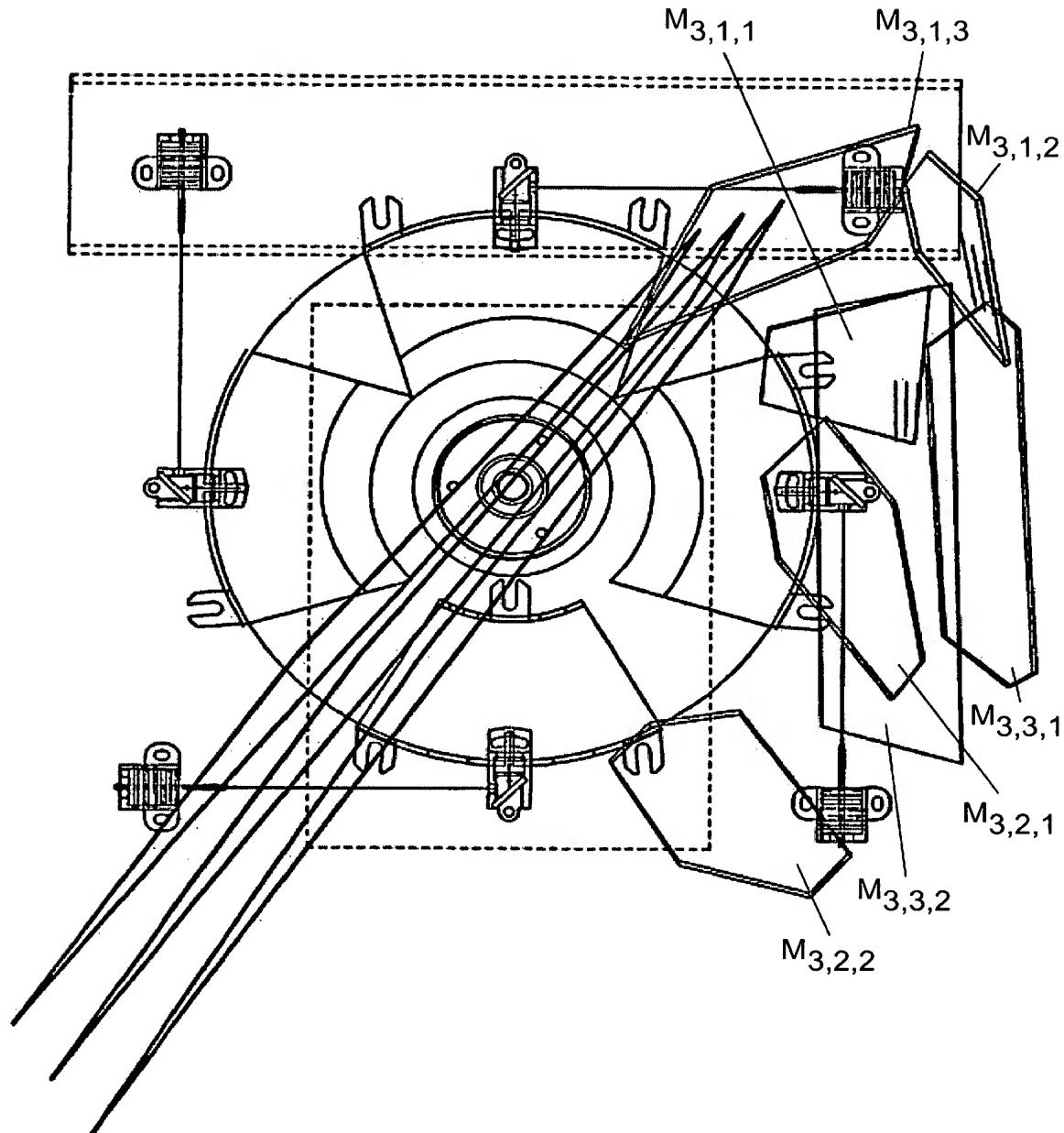


FIG. 5N2

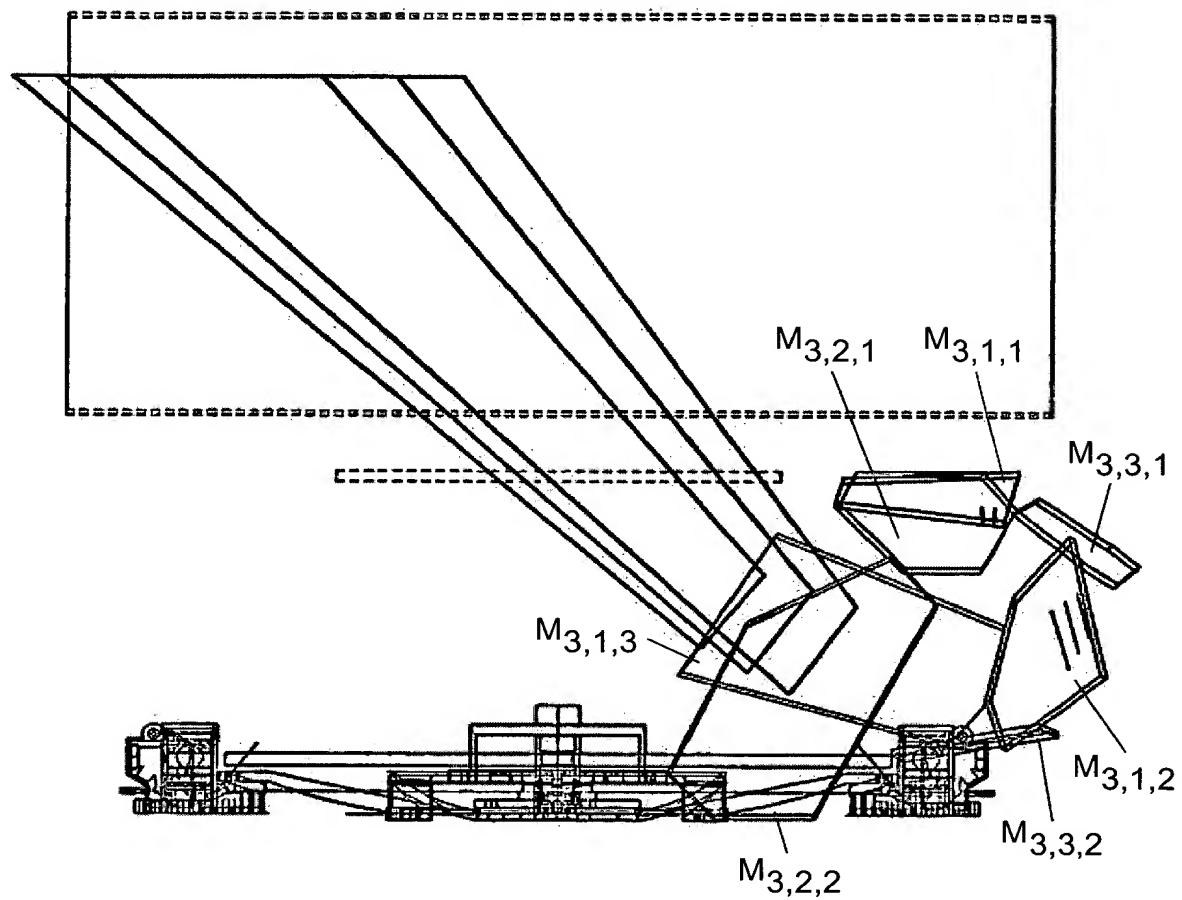
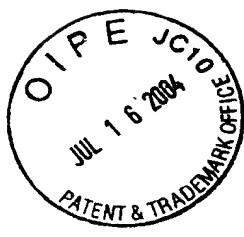


FIG. 5N3

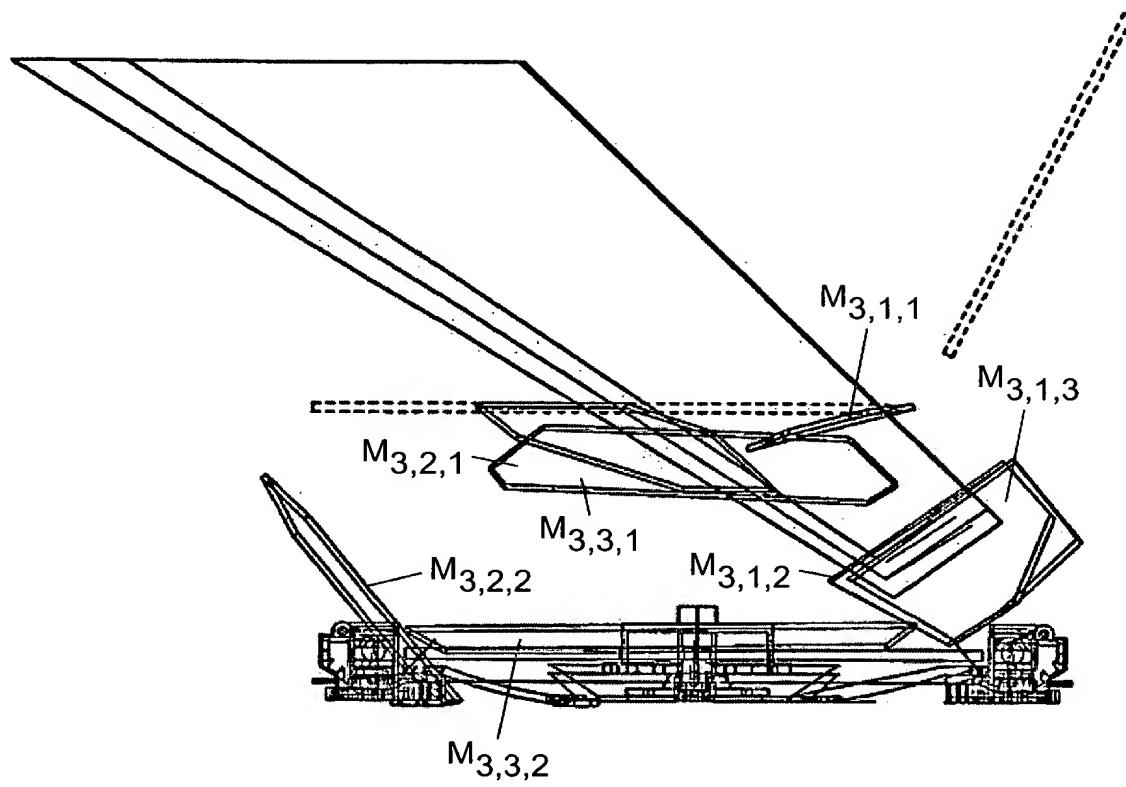
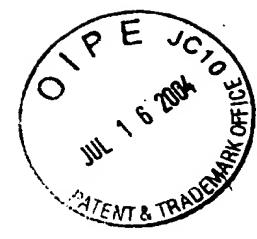


FIG. 5N4

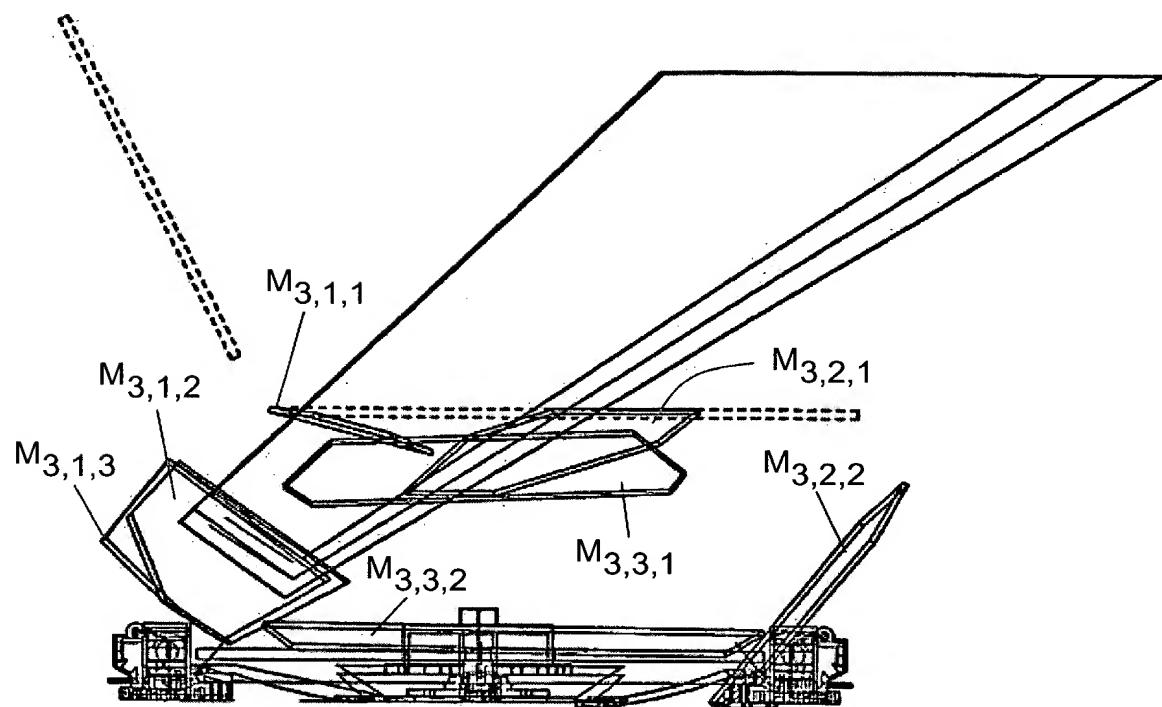


FIG. 5N5

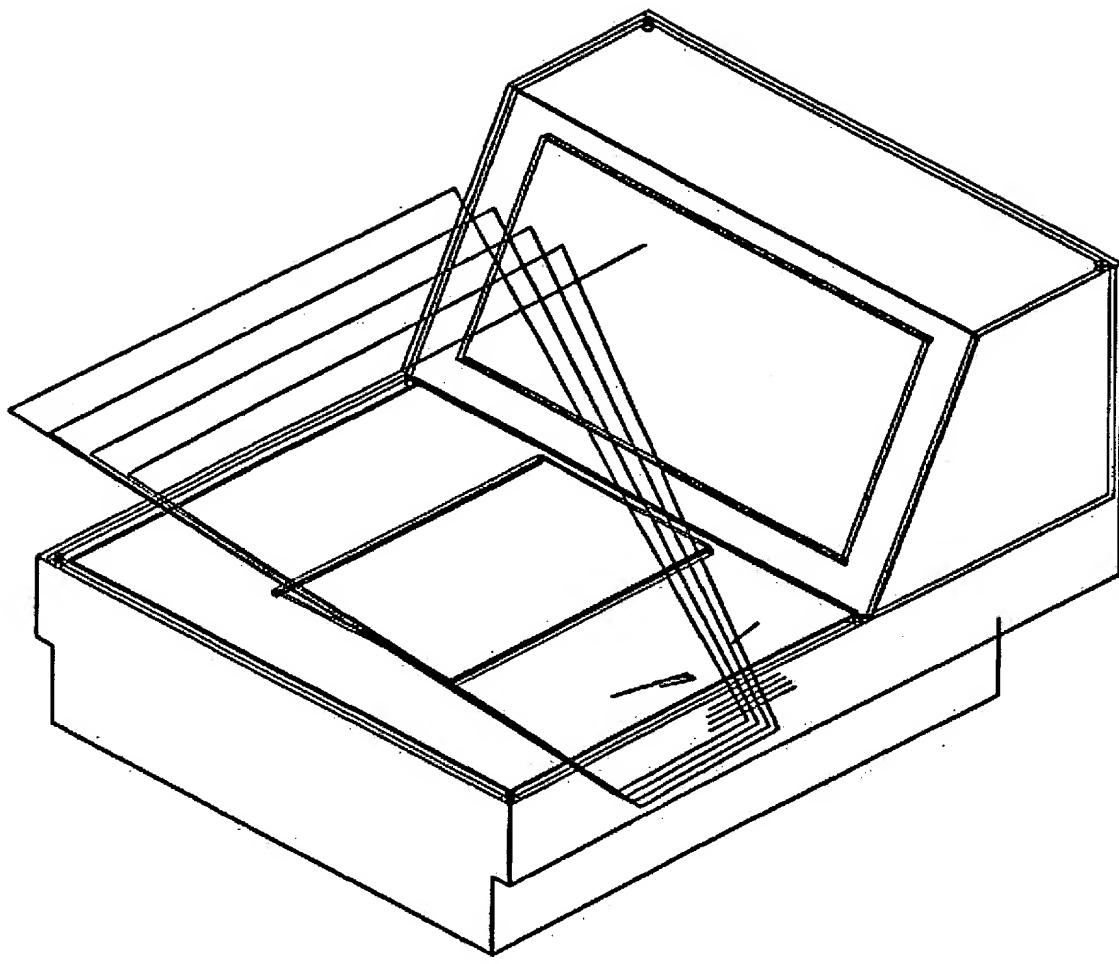
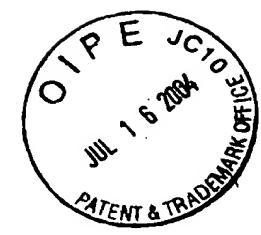


FIG. 5O1

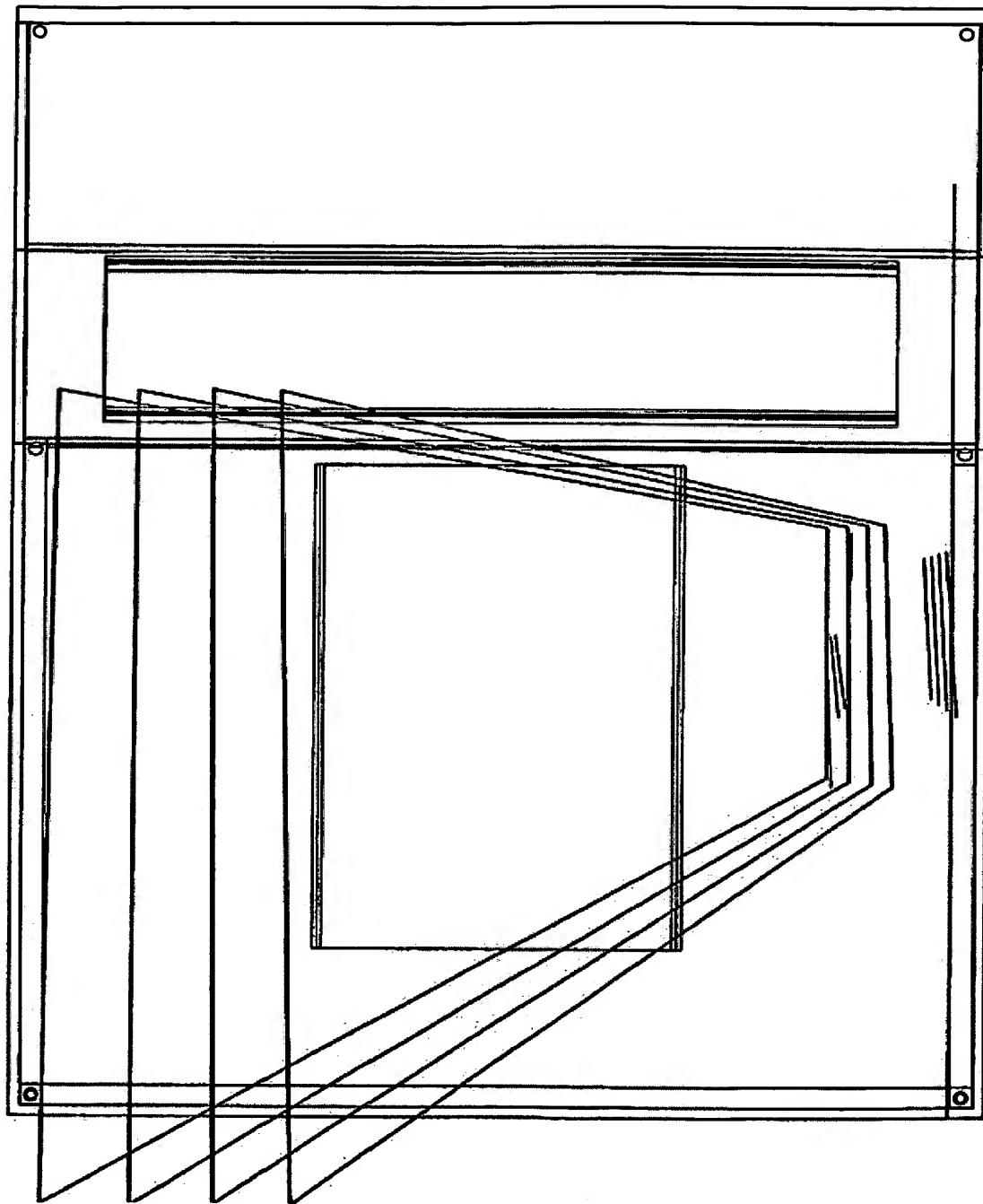


FIG. 5O2

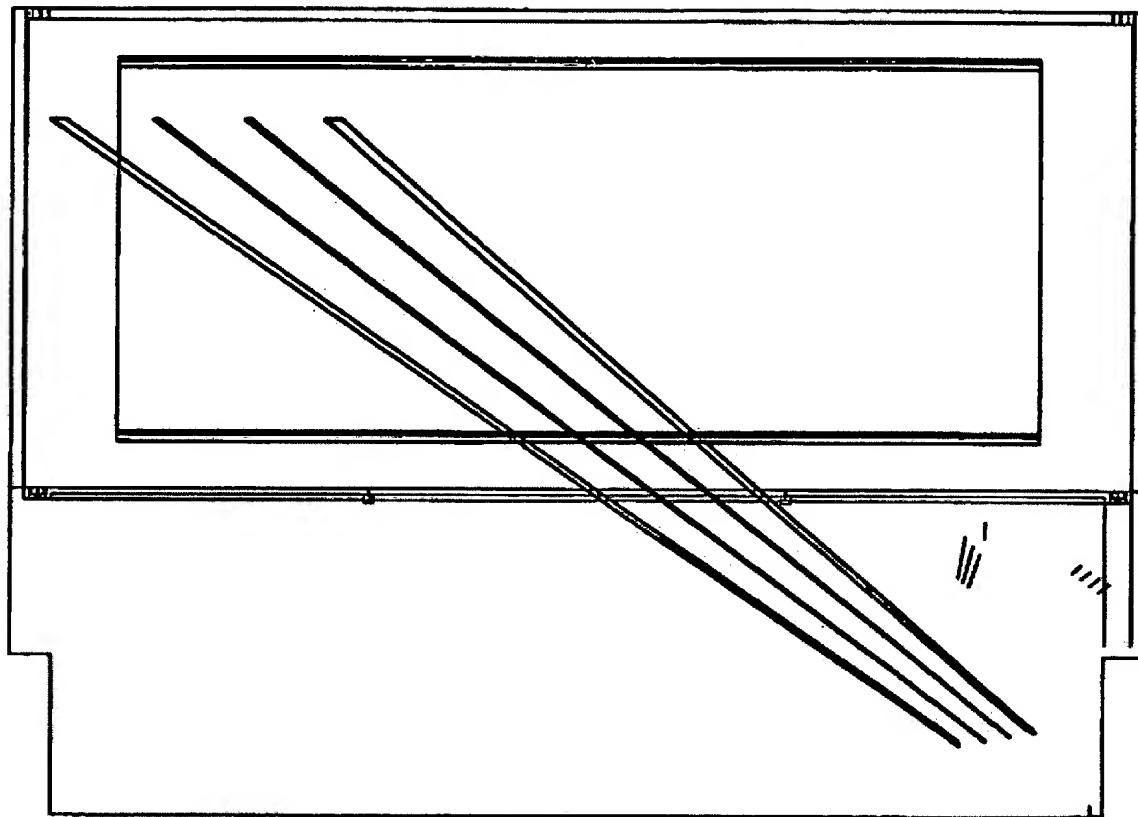
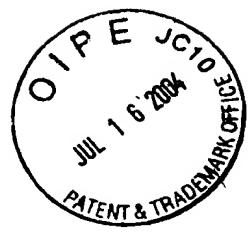


FIG. 5O3

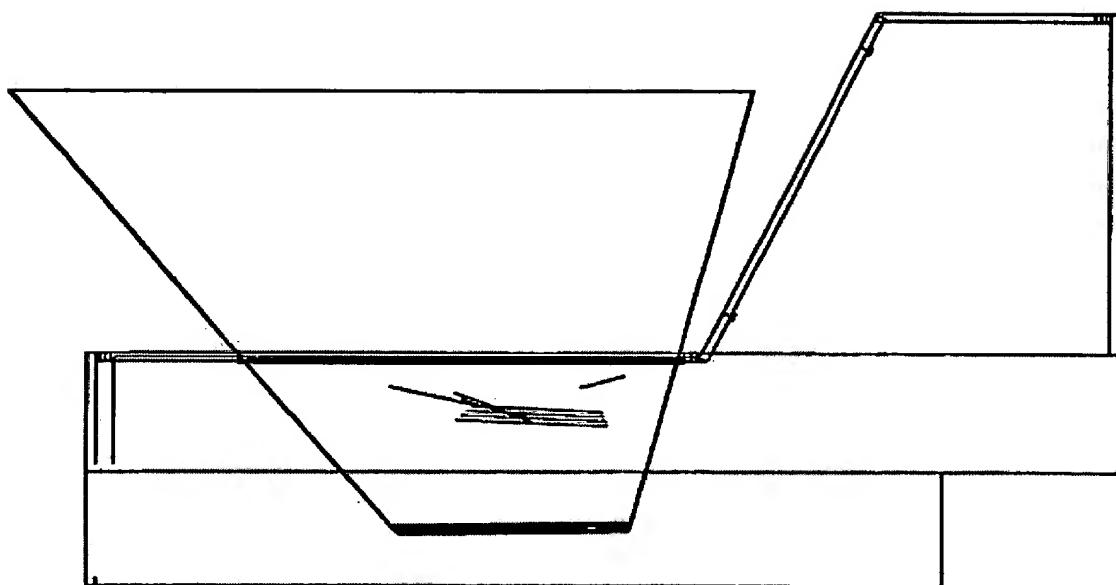


FIG. 504

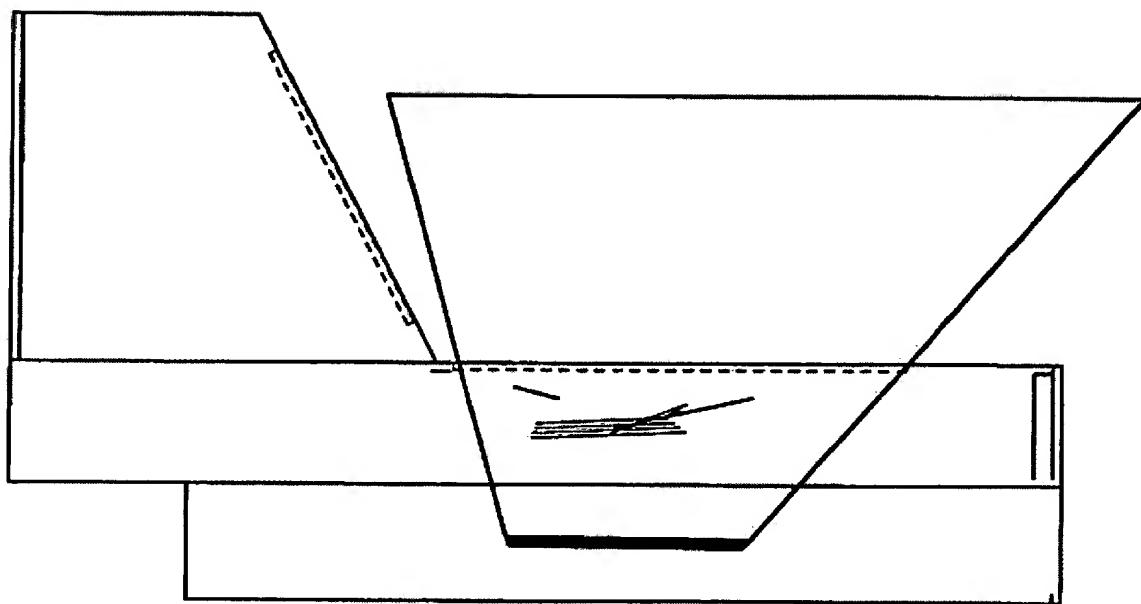


FIG. 505

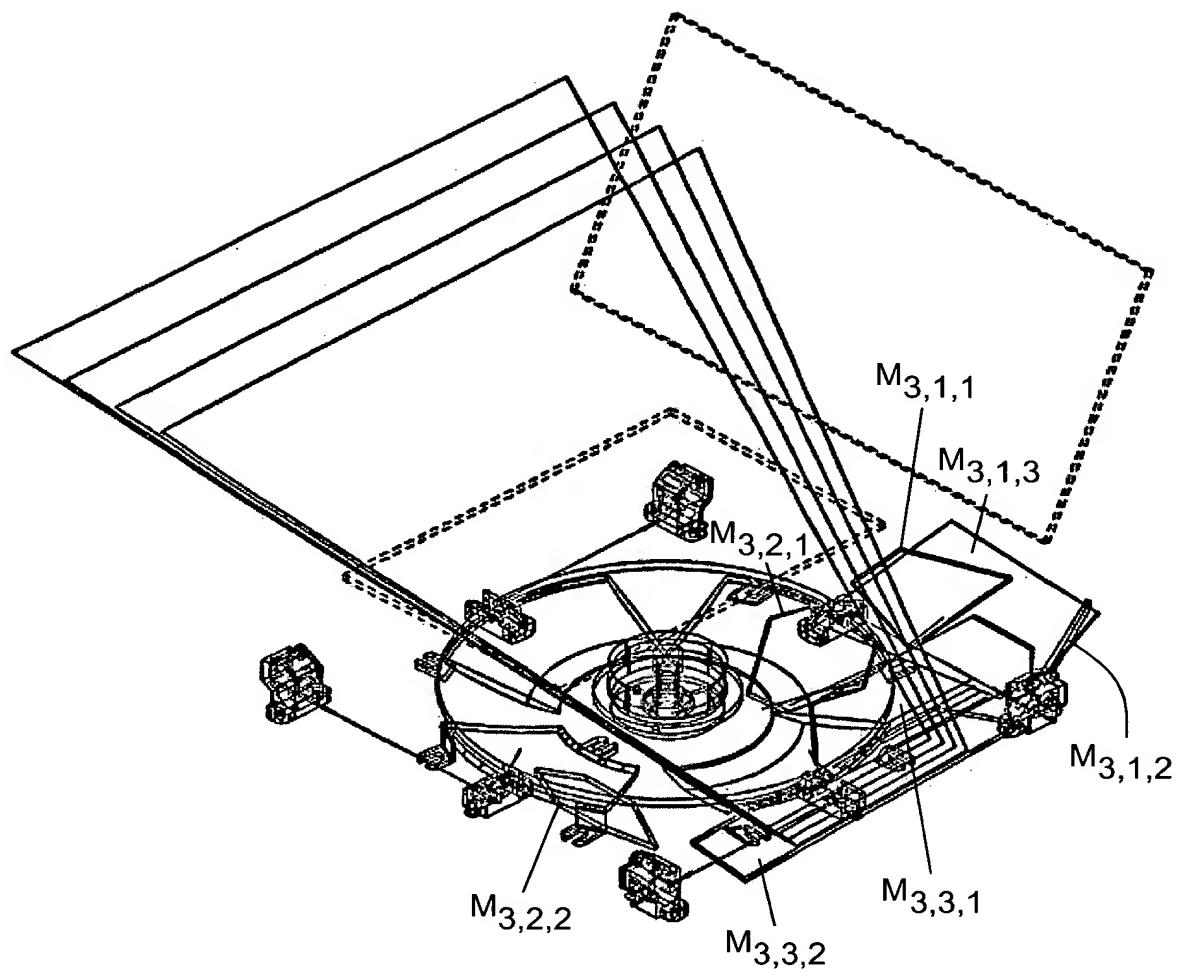
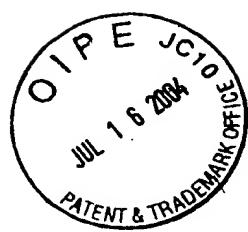


FIG. 5P1

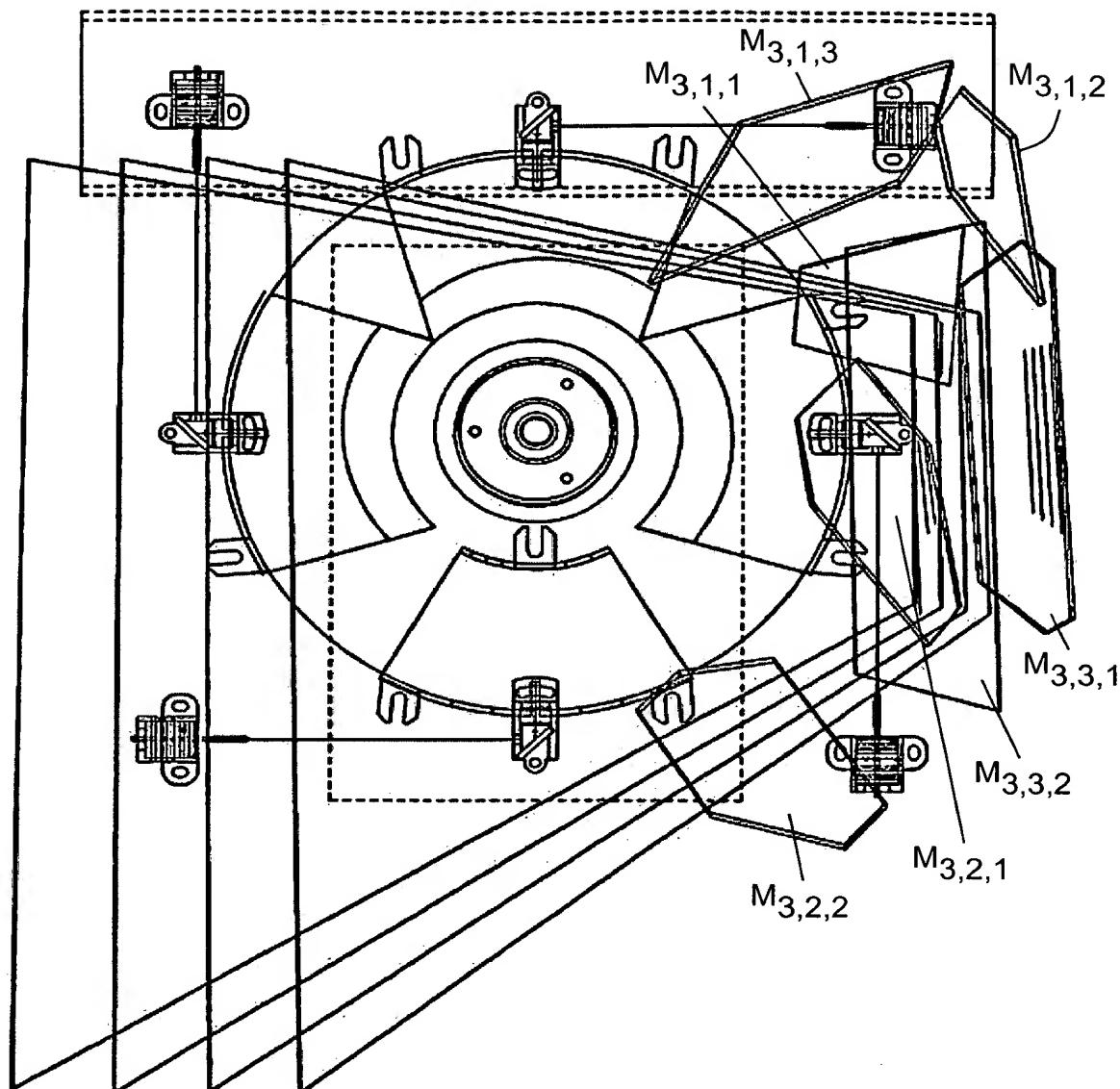


FIG. 5P2

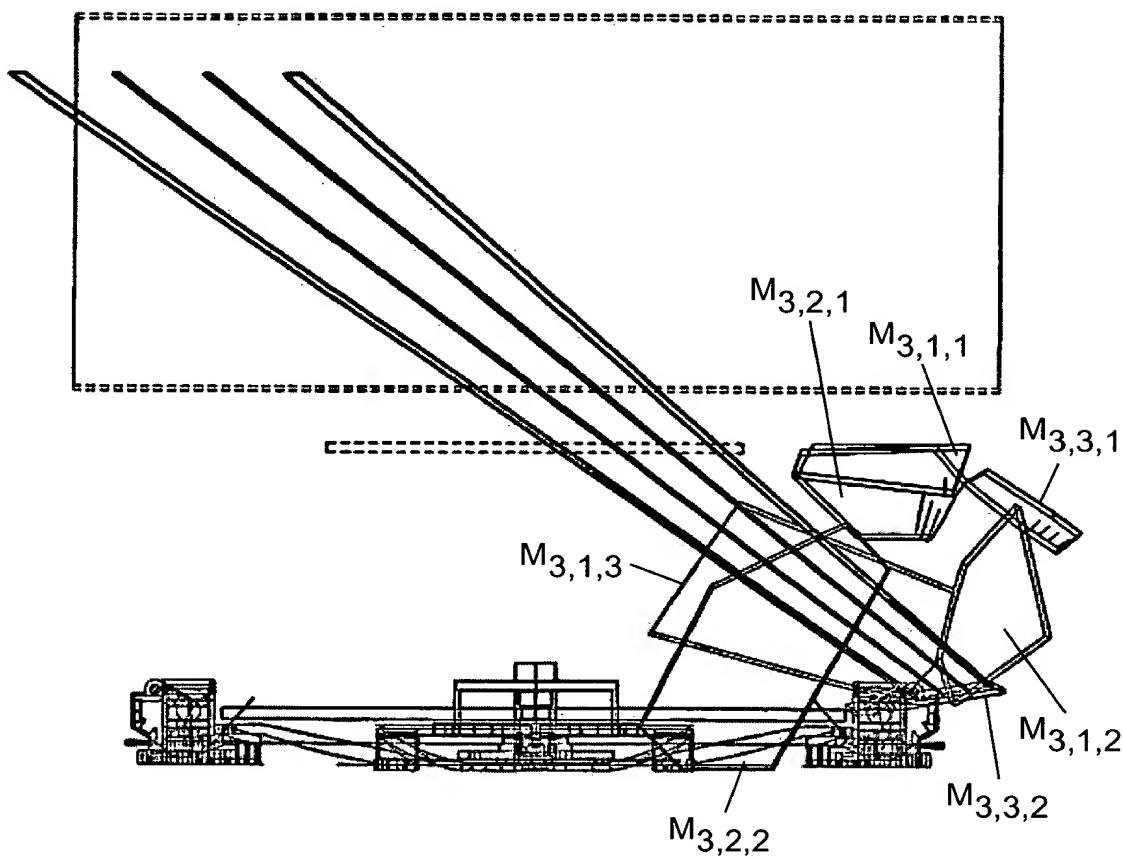


FIG. 5P3

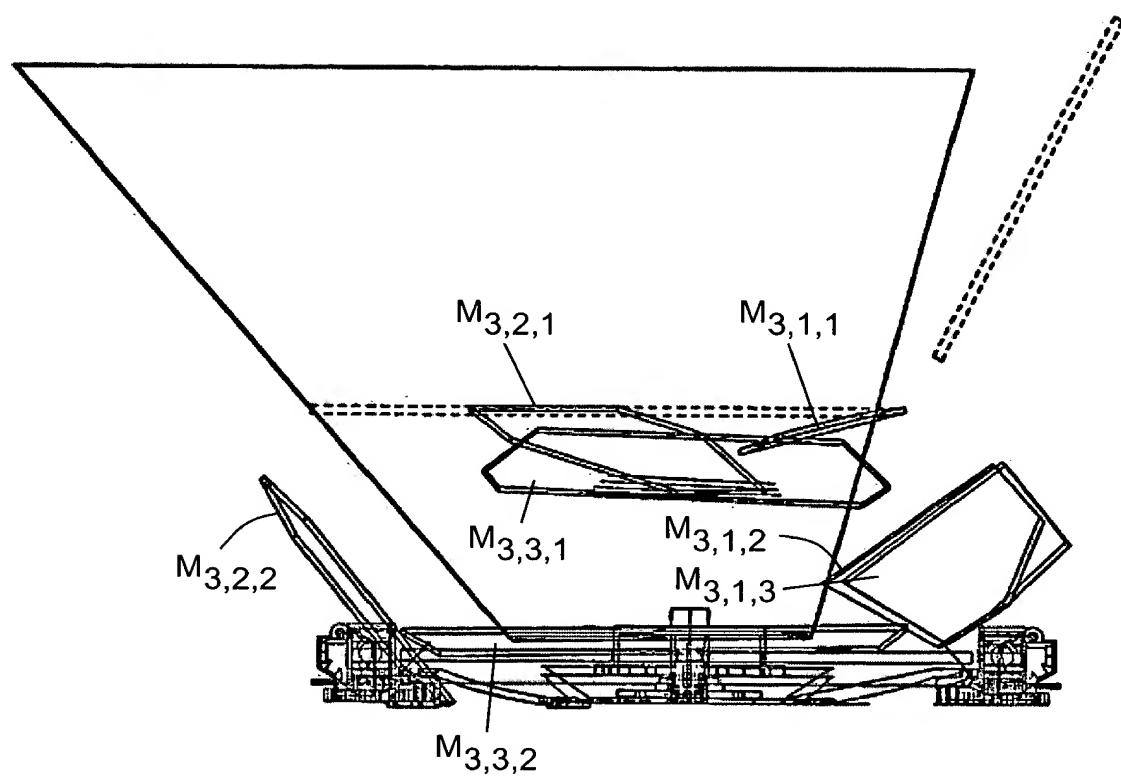
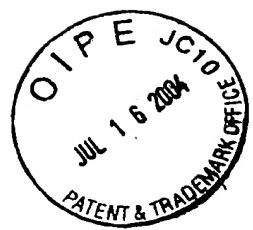


FIG. 5P4

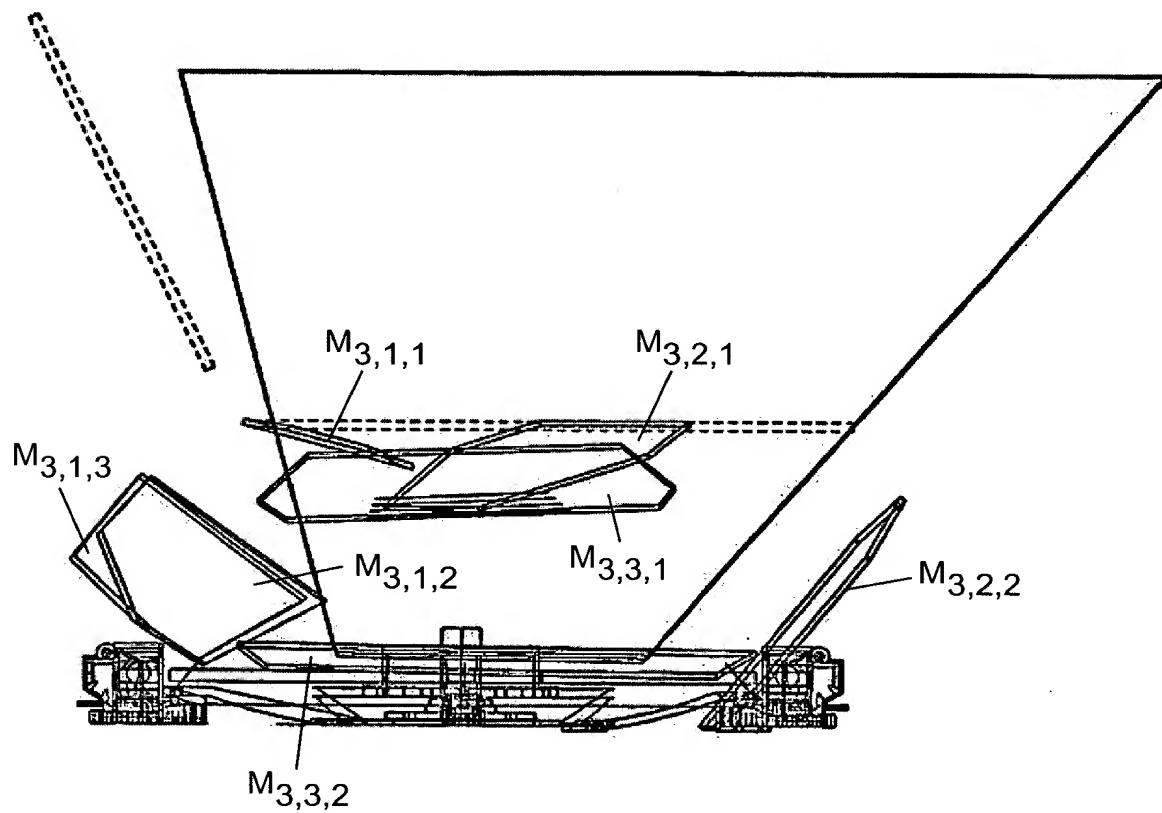


FIG. 5P5

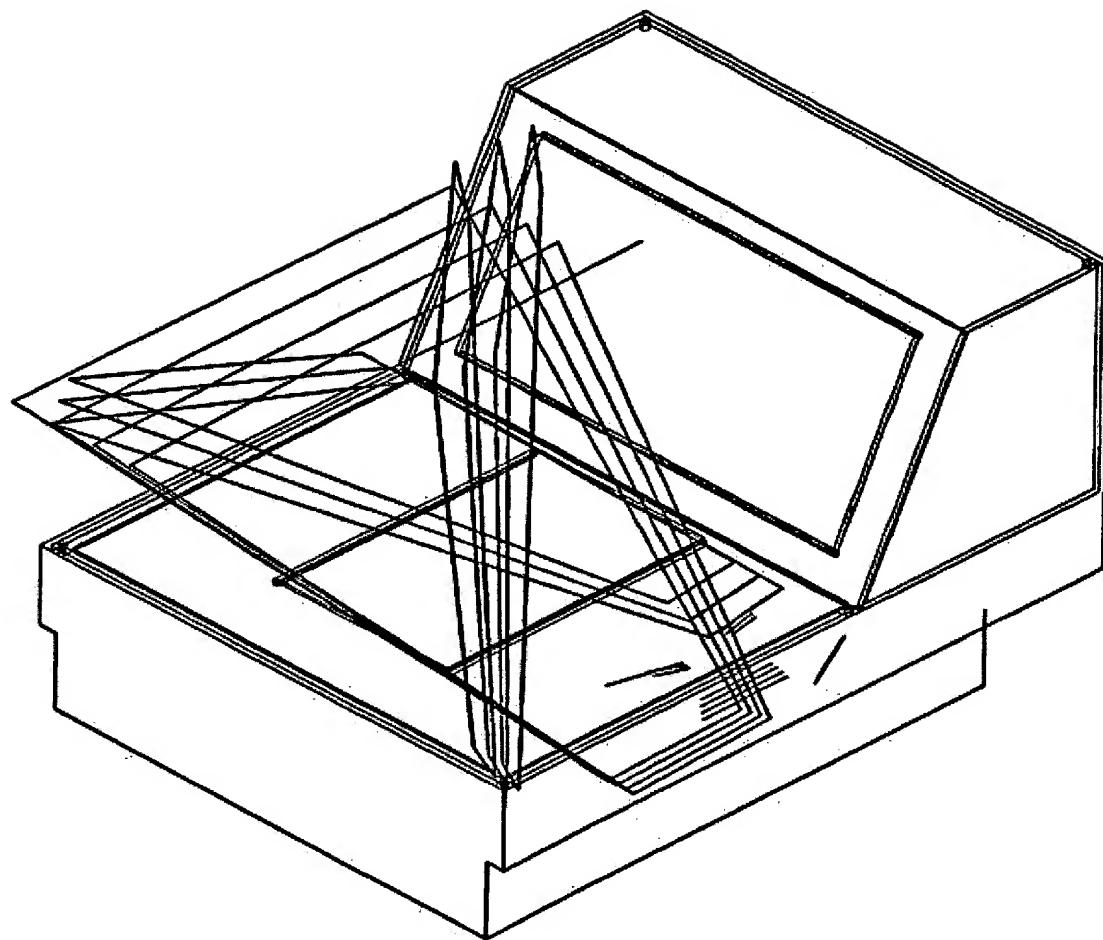
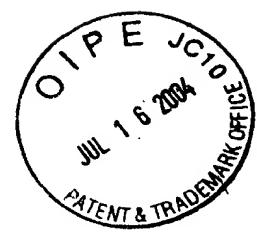


FIG. 5Q1

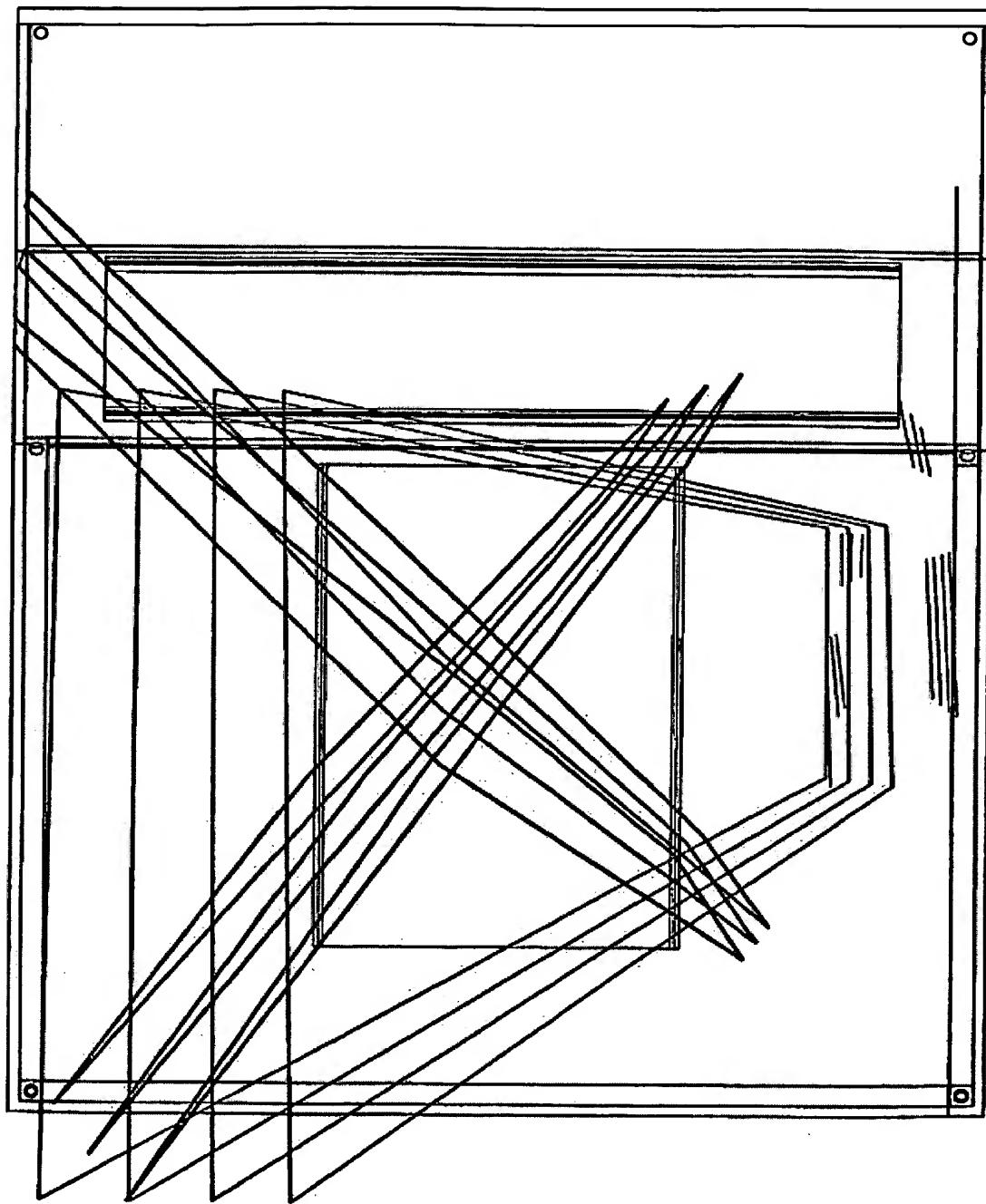
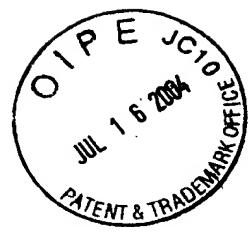


FIG. 5Q2

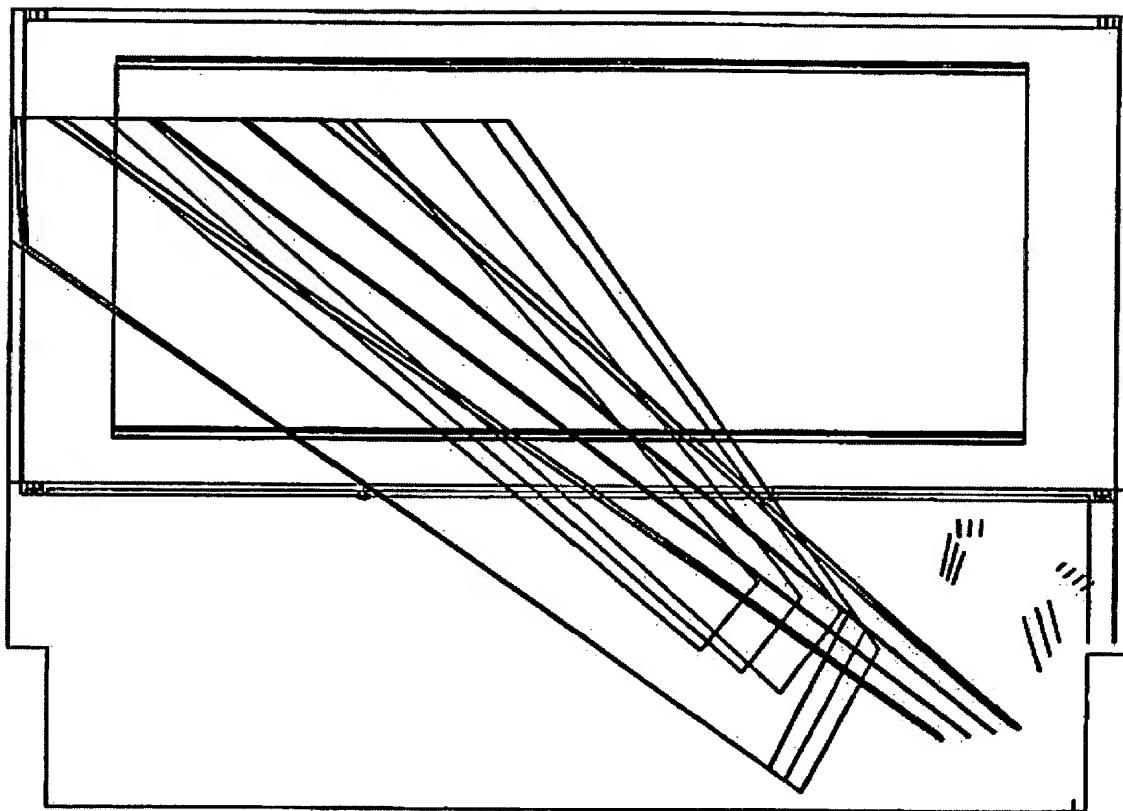


FIG. 5Q3

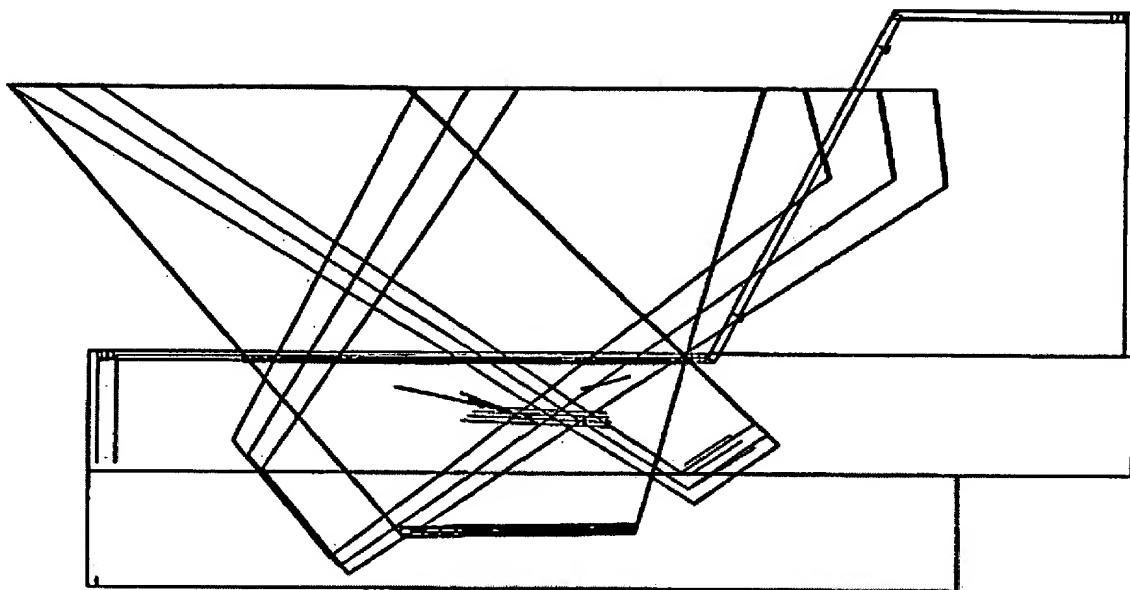


FIG. 5Q4

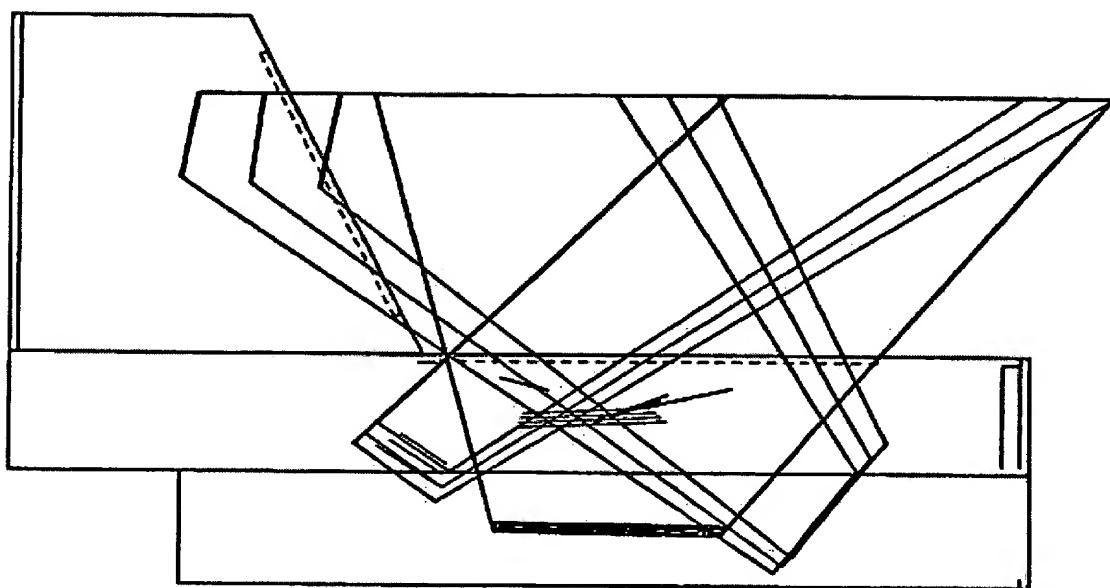


FIG. 5Q5

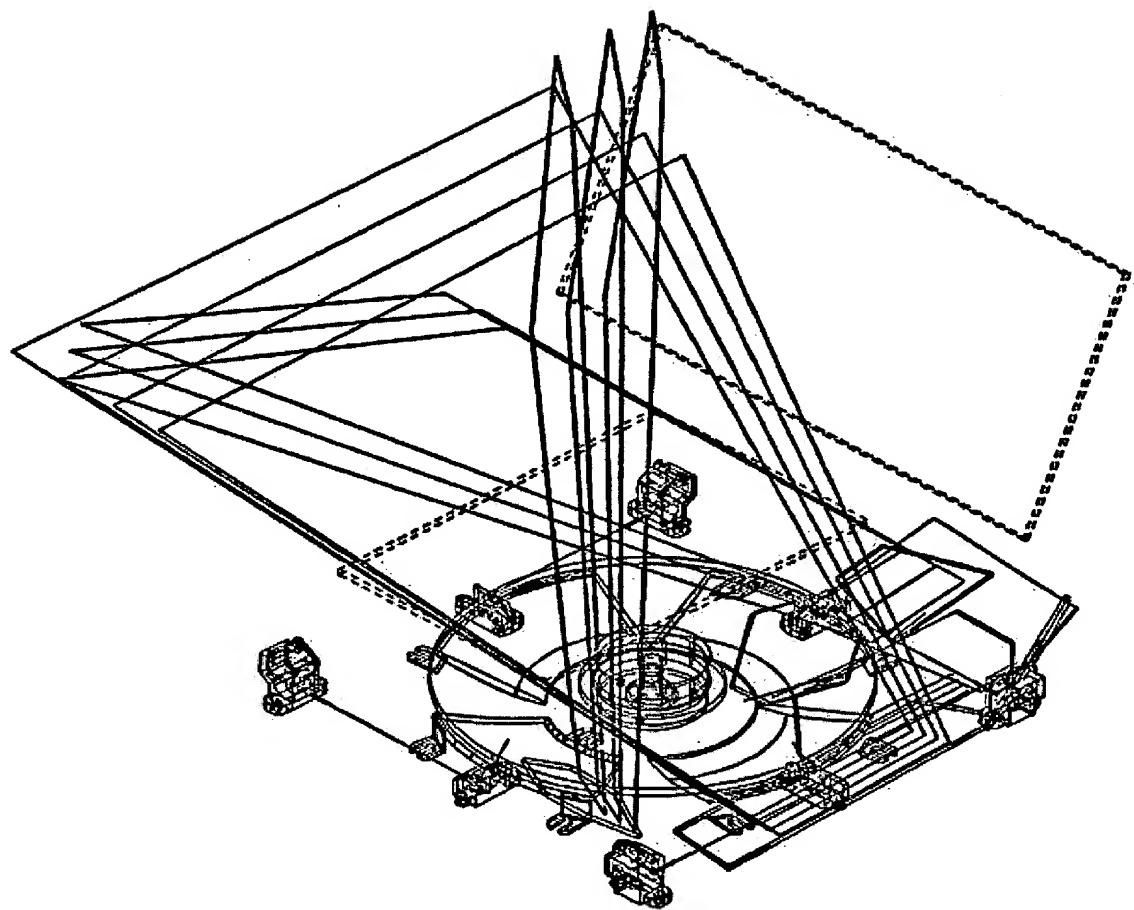
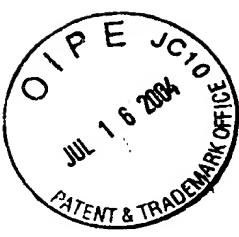


FIG. 5R1

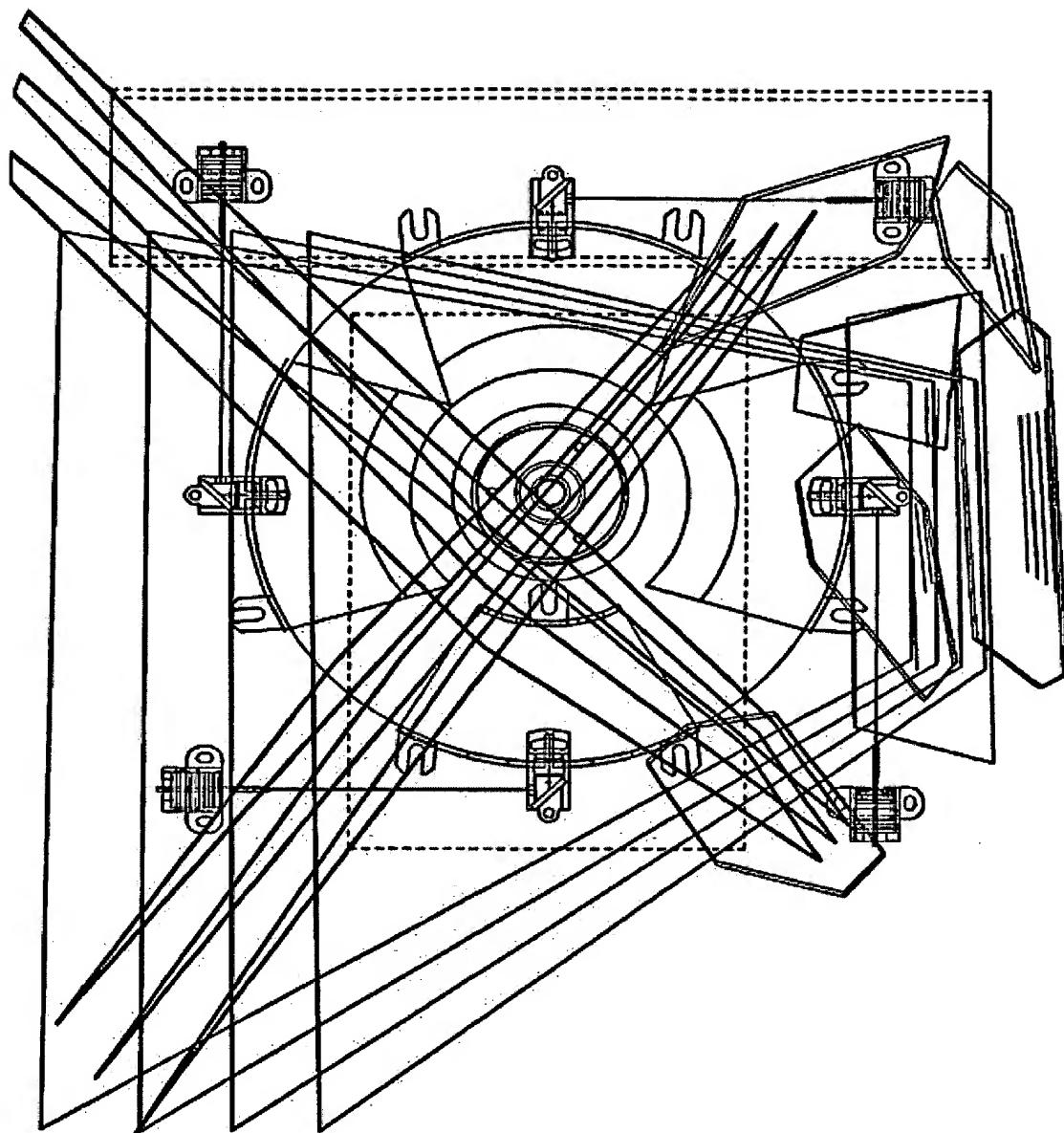
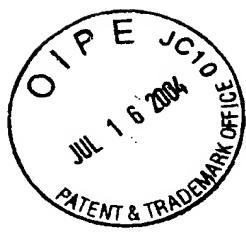


FIG. 5R2

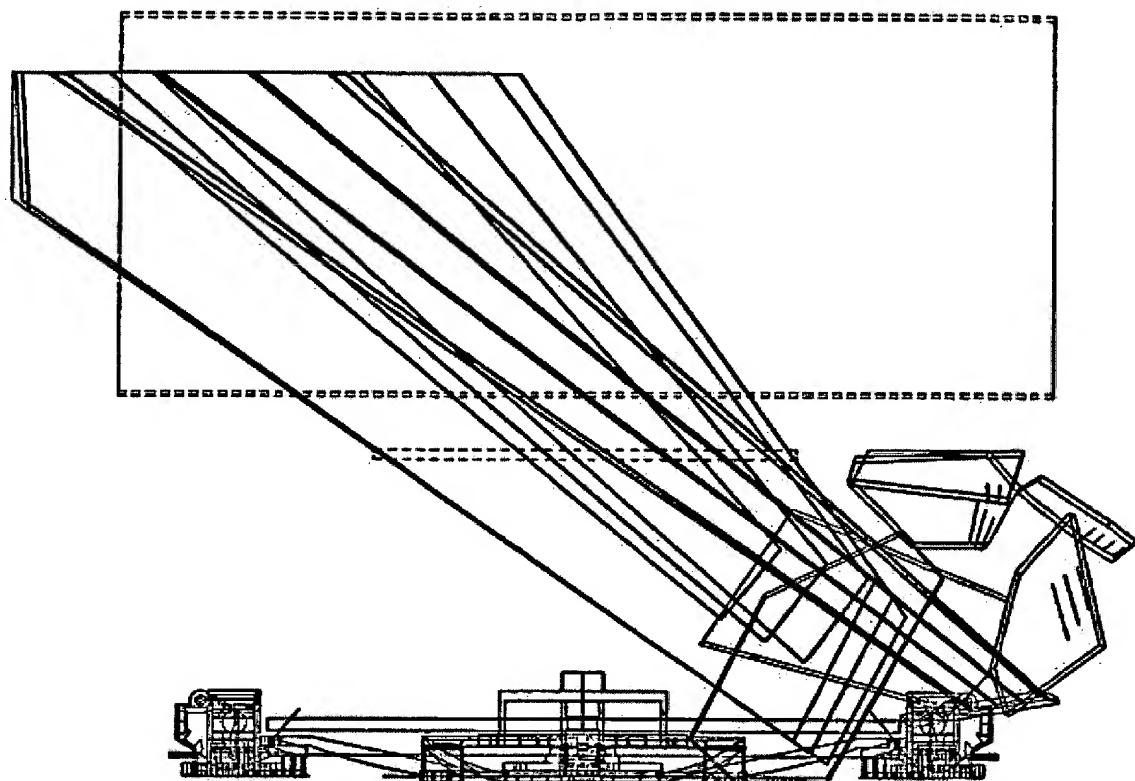


FIG. 5R3

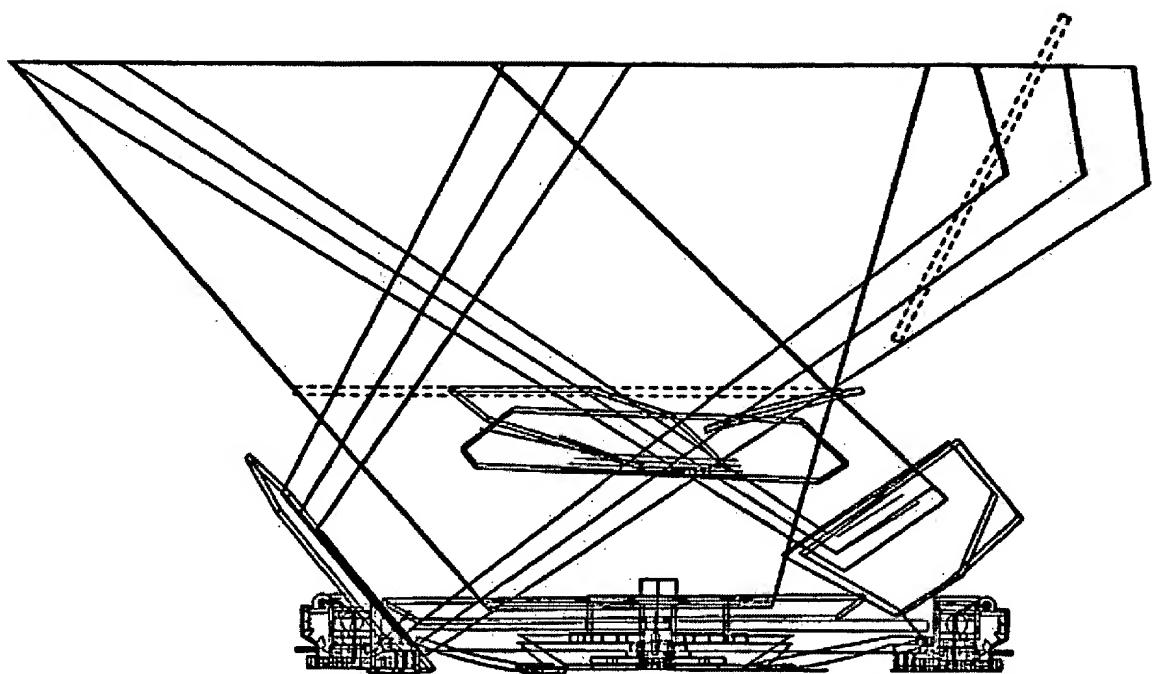
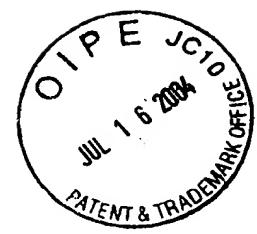


FIG. 5R4

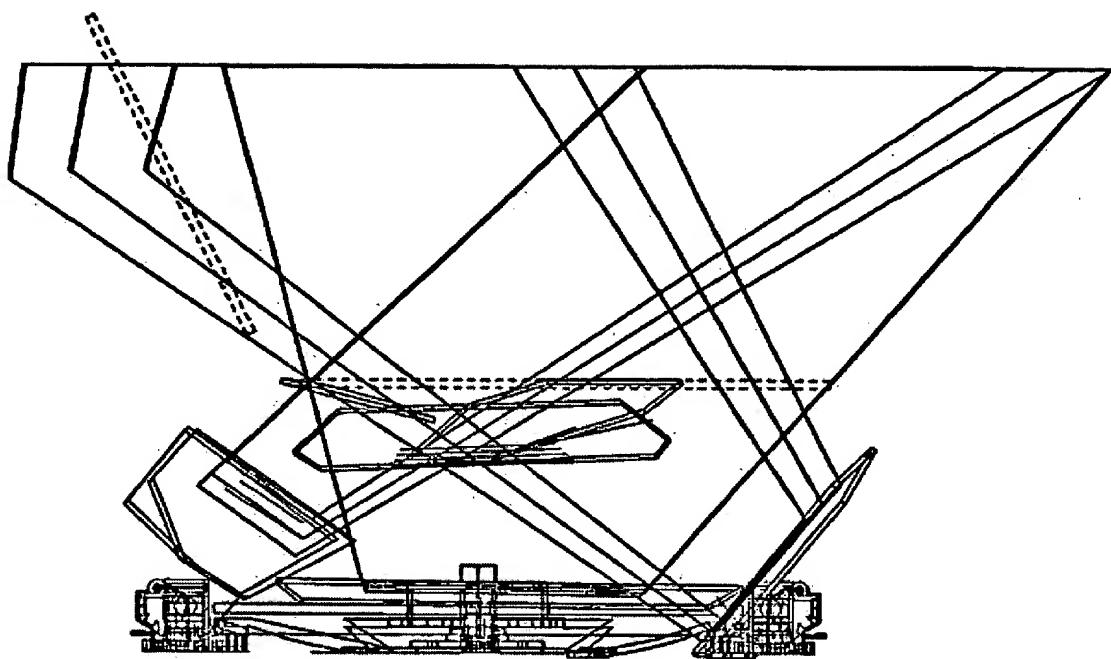


FIG. 5R5

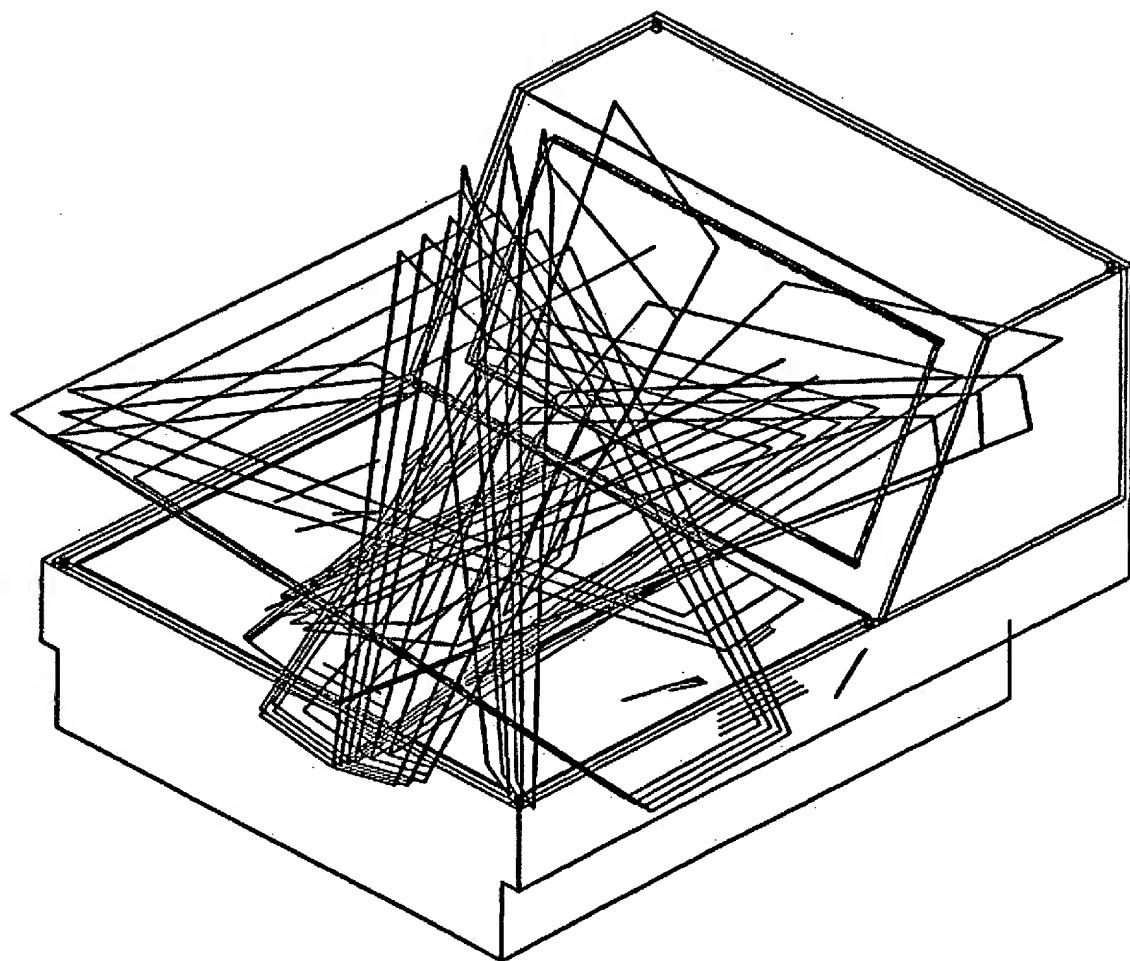
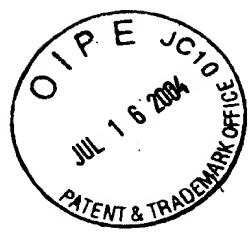


FIG. 5S1

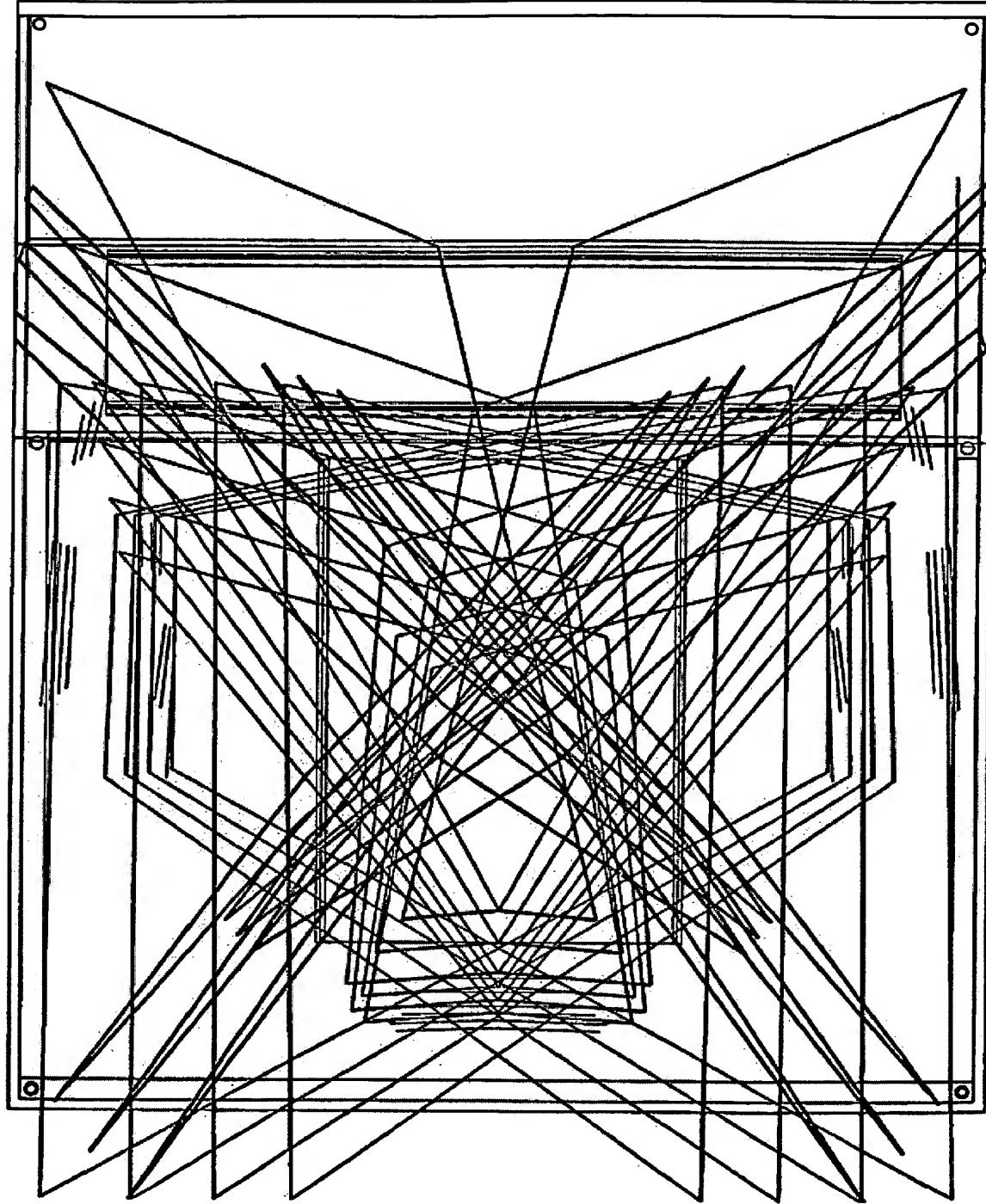
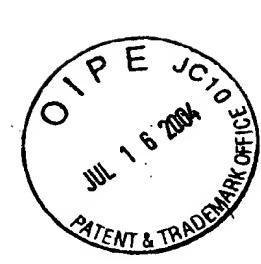


FIG. 5S2

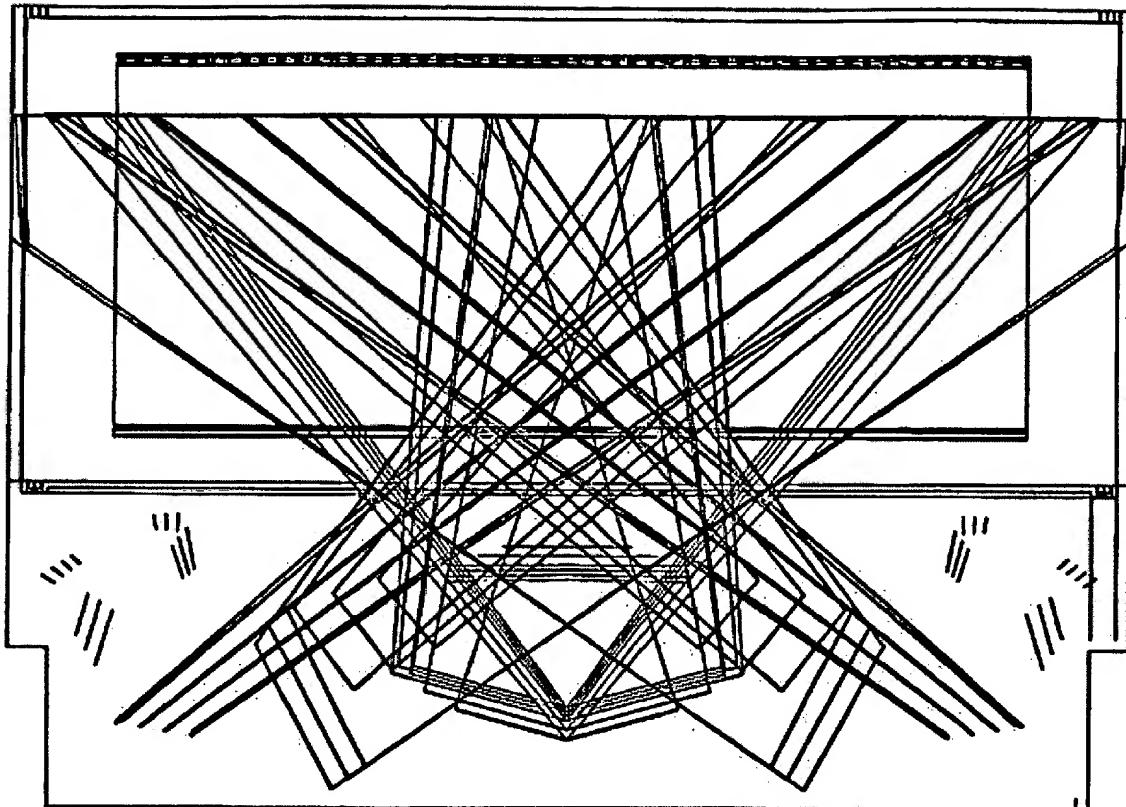
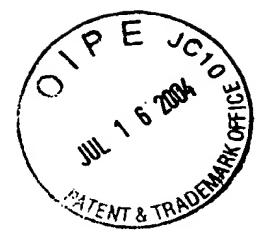


FIG. 5S3

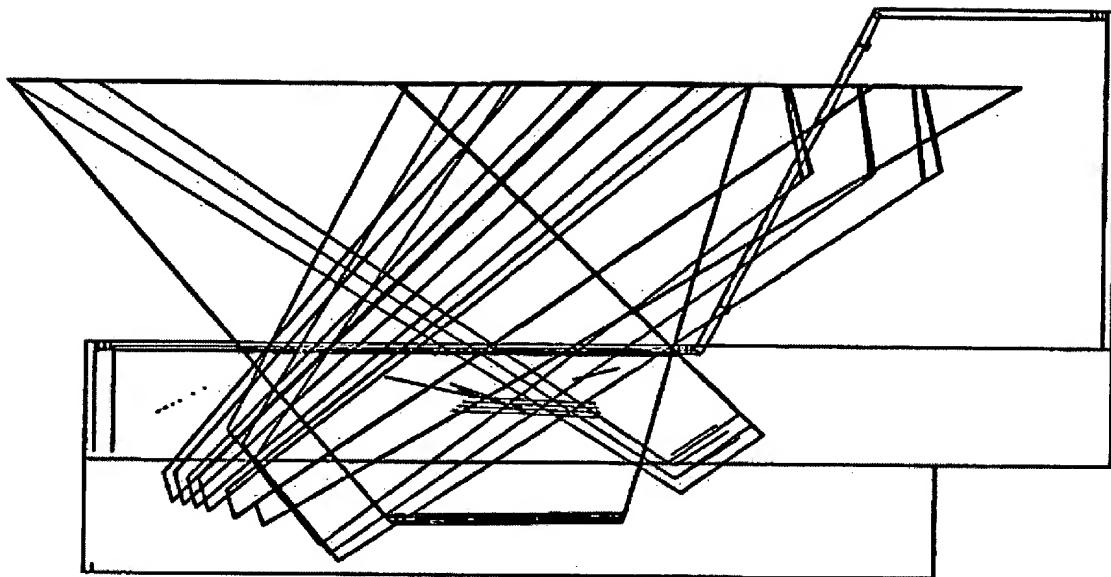
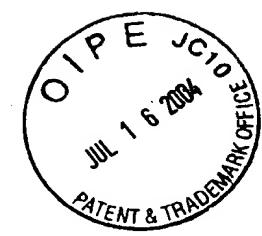


FIG. 5S4

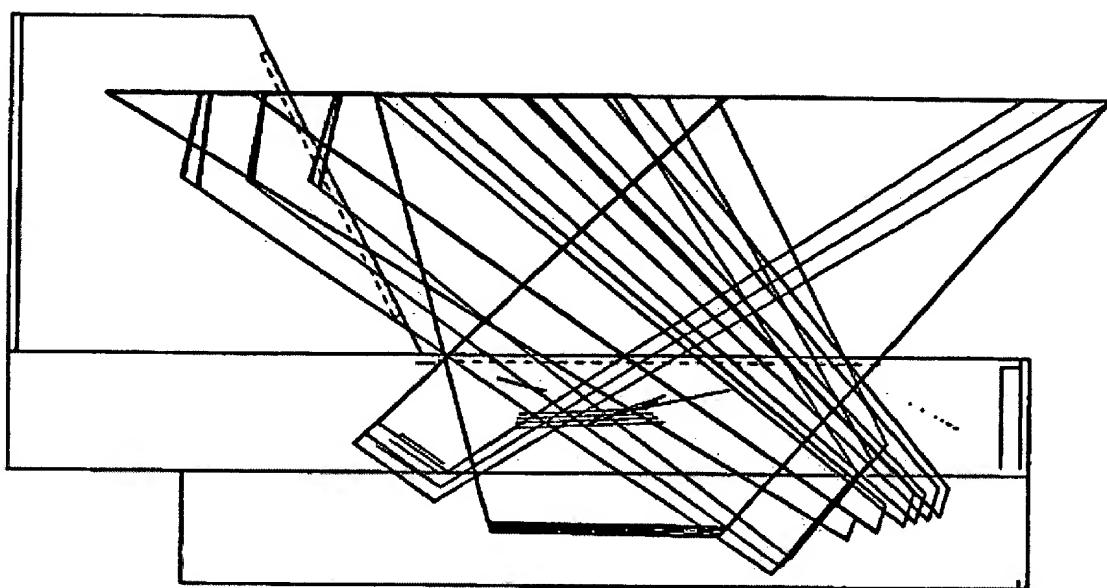


FIG. 5S5

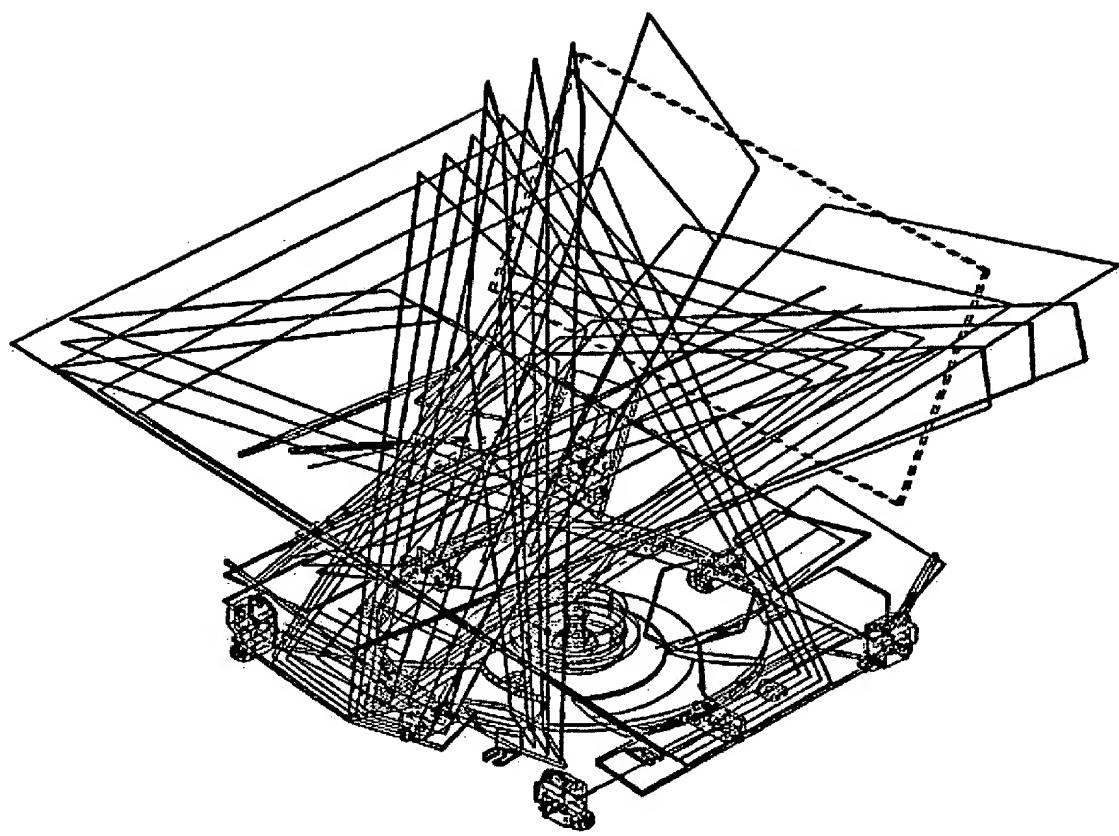


FIG. 5T1

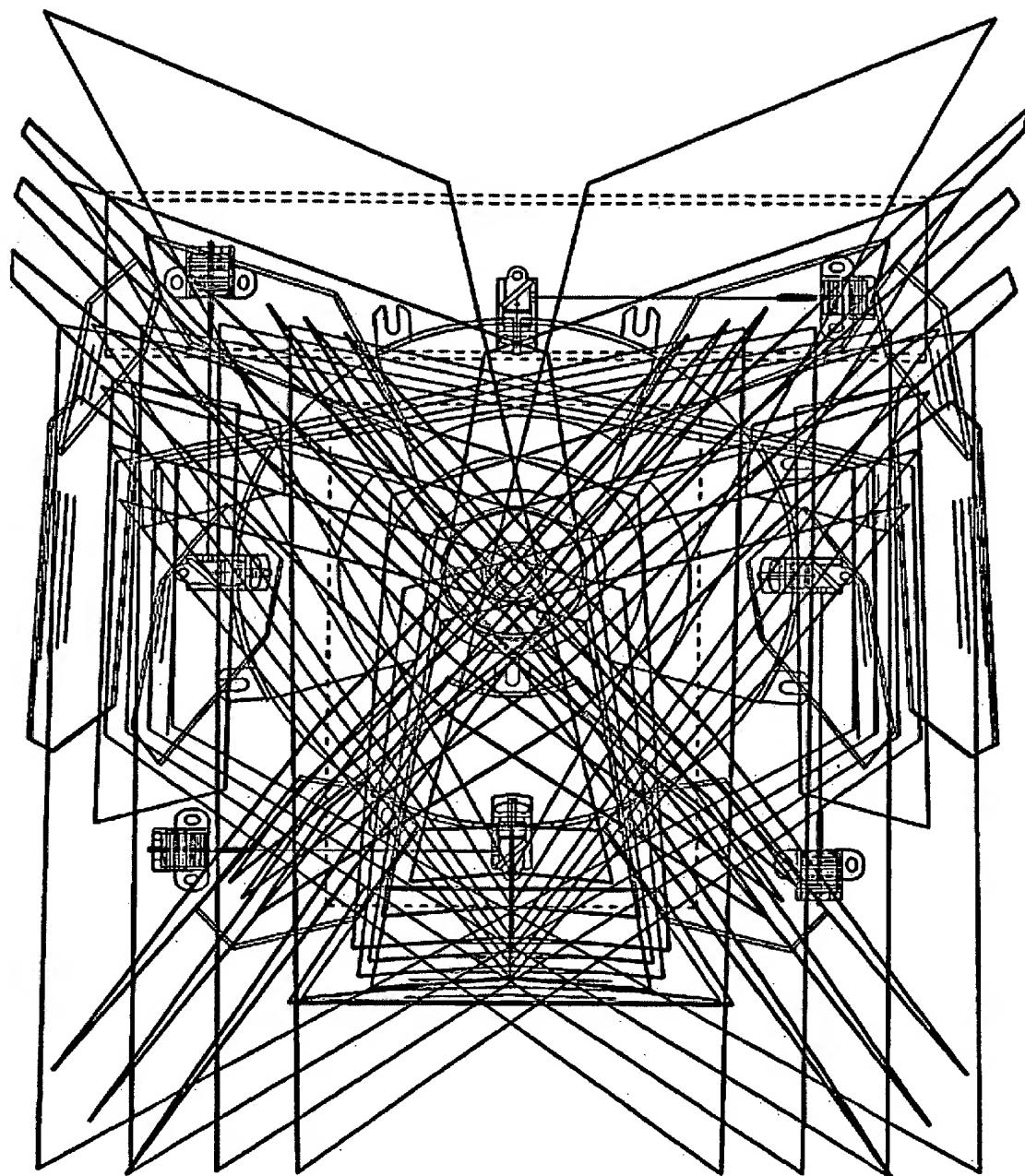
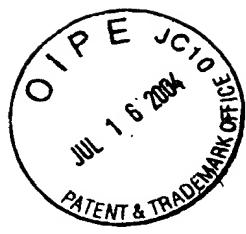


FIG. 5T2

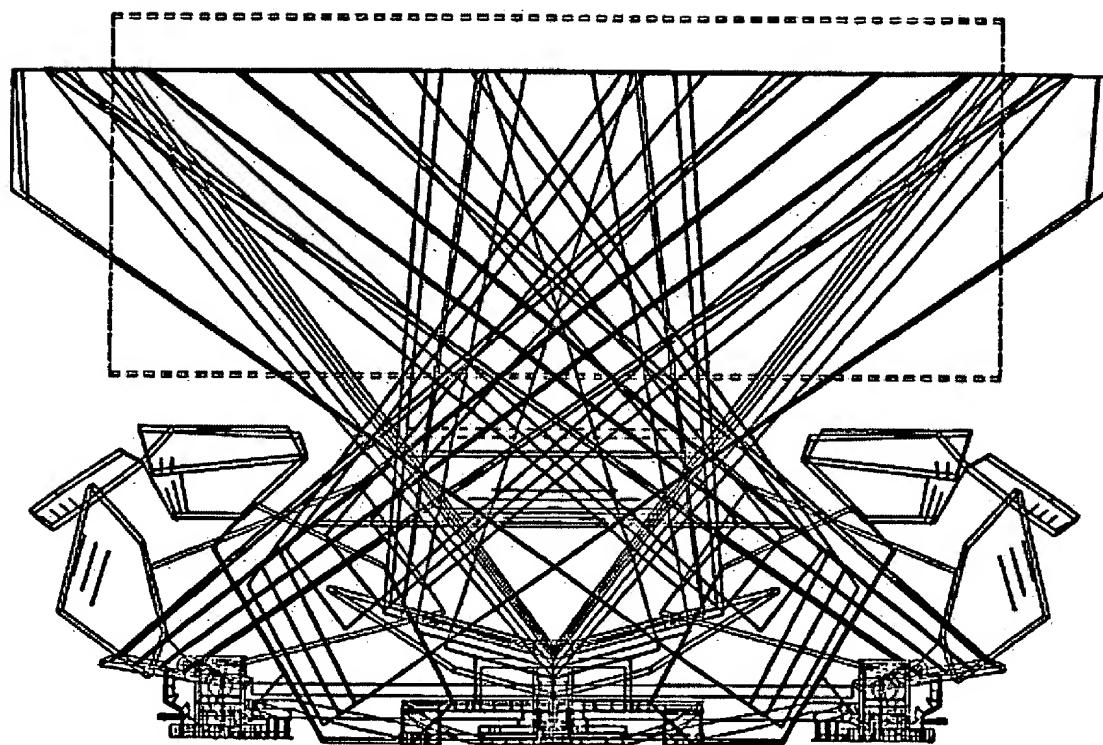
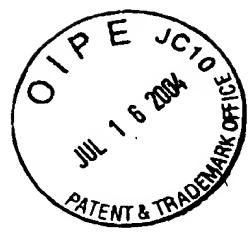


FIG. 5T3

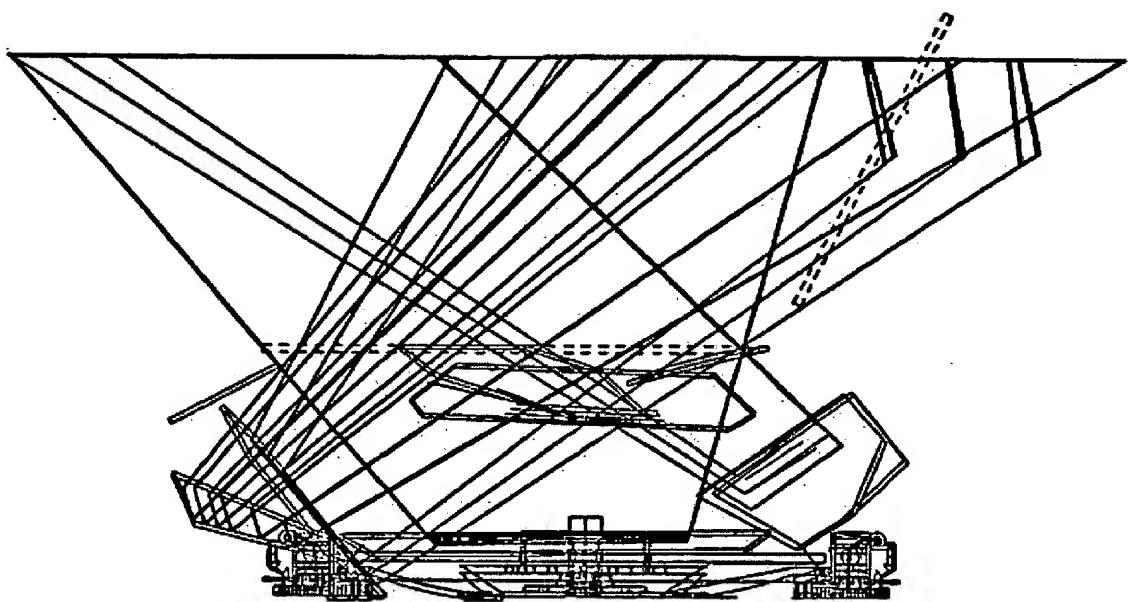
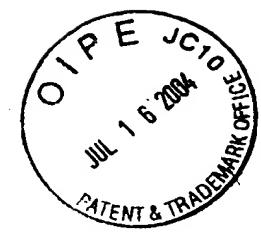


FIG. 5T4

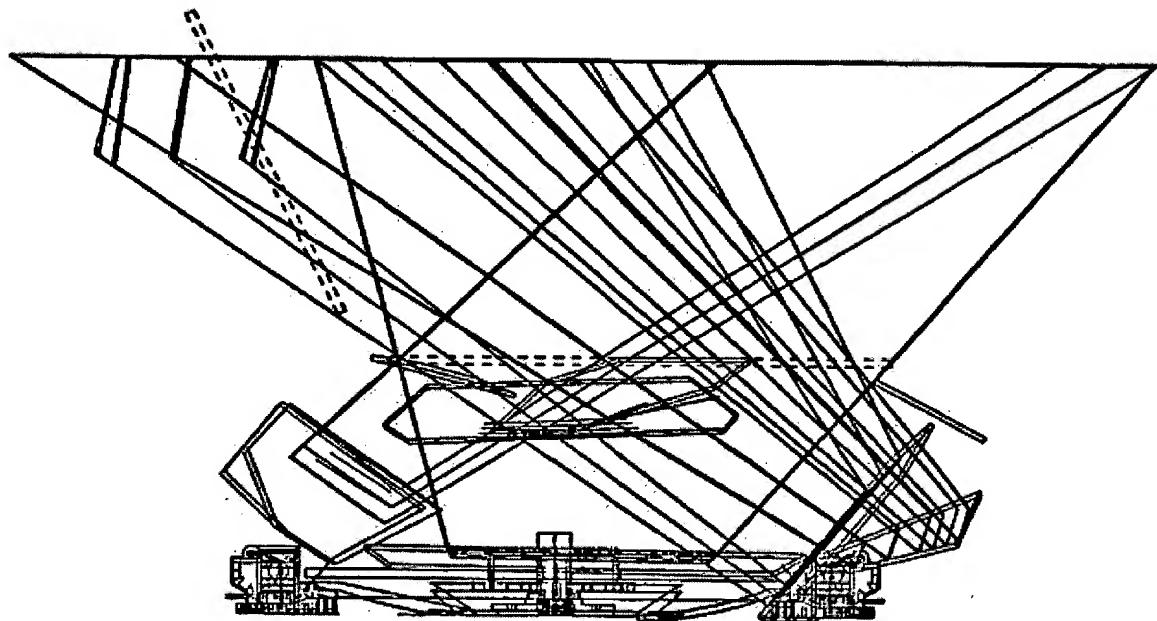
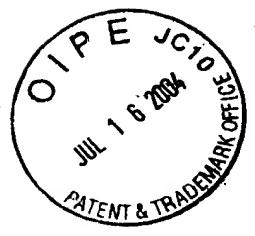


FIG. 5T5

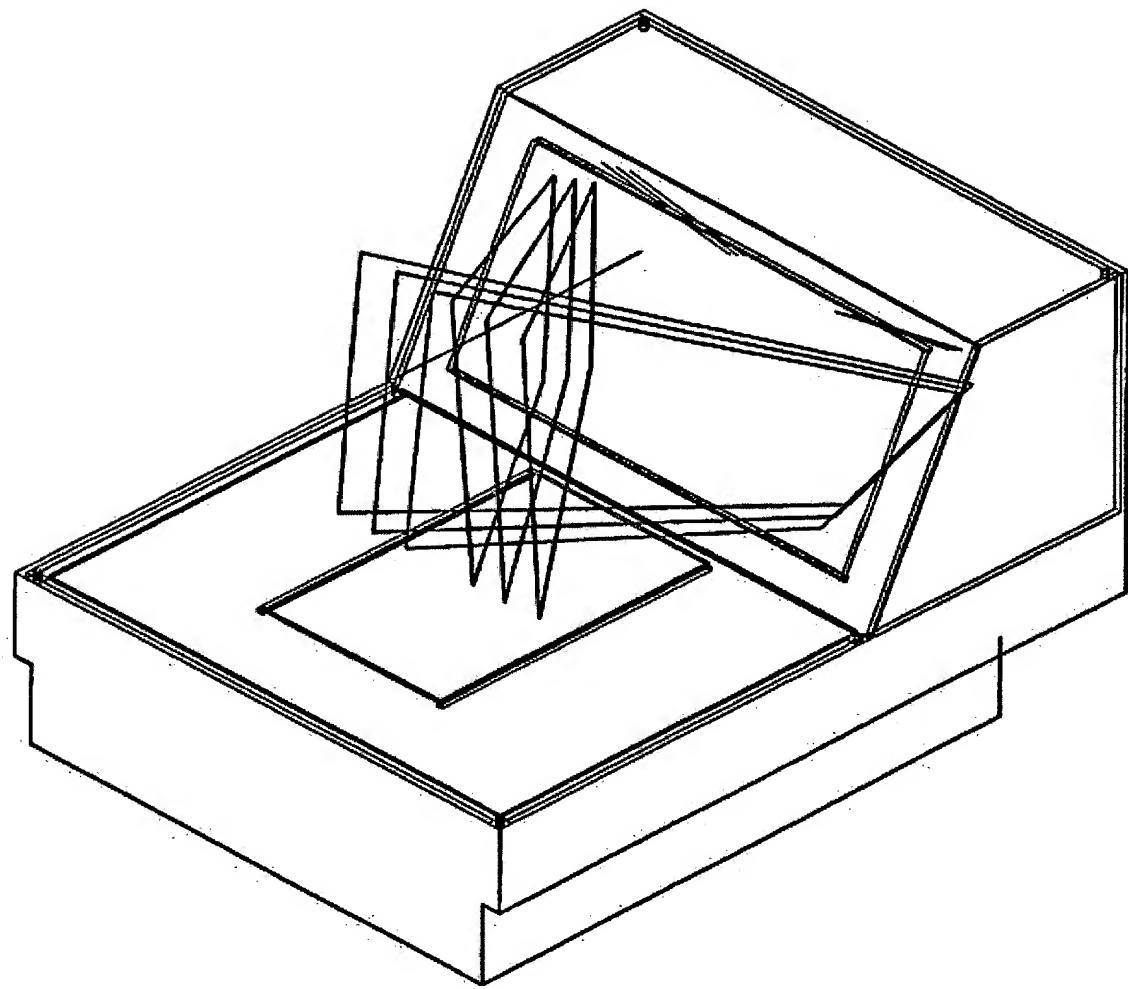


FIG. 5U1

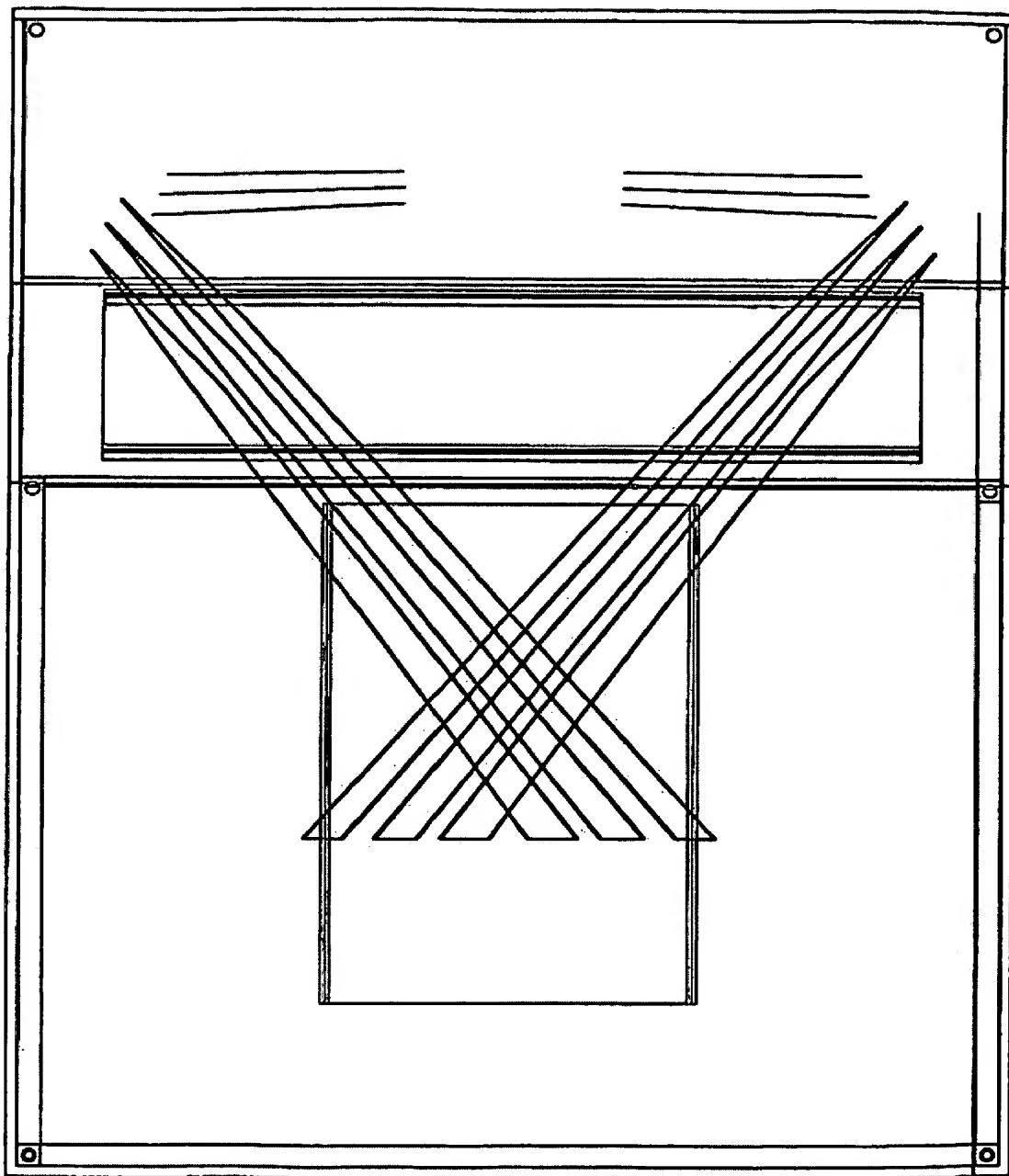
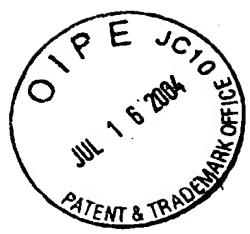


FIG. 5U2

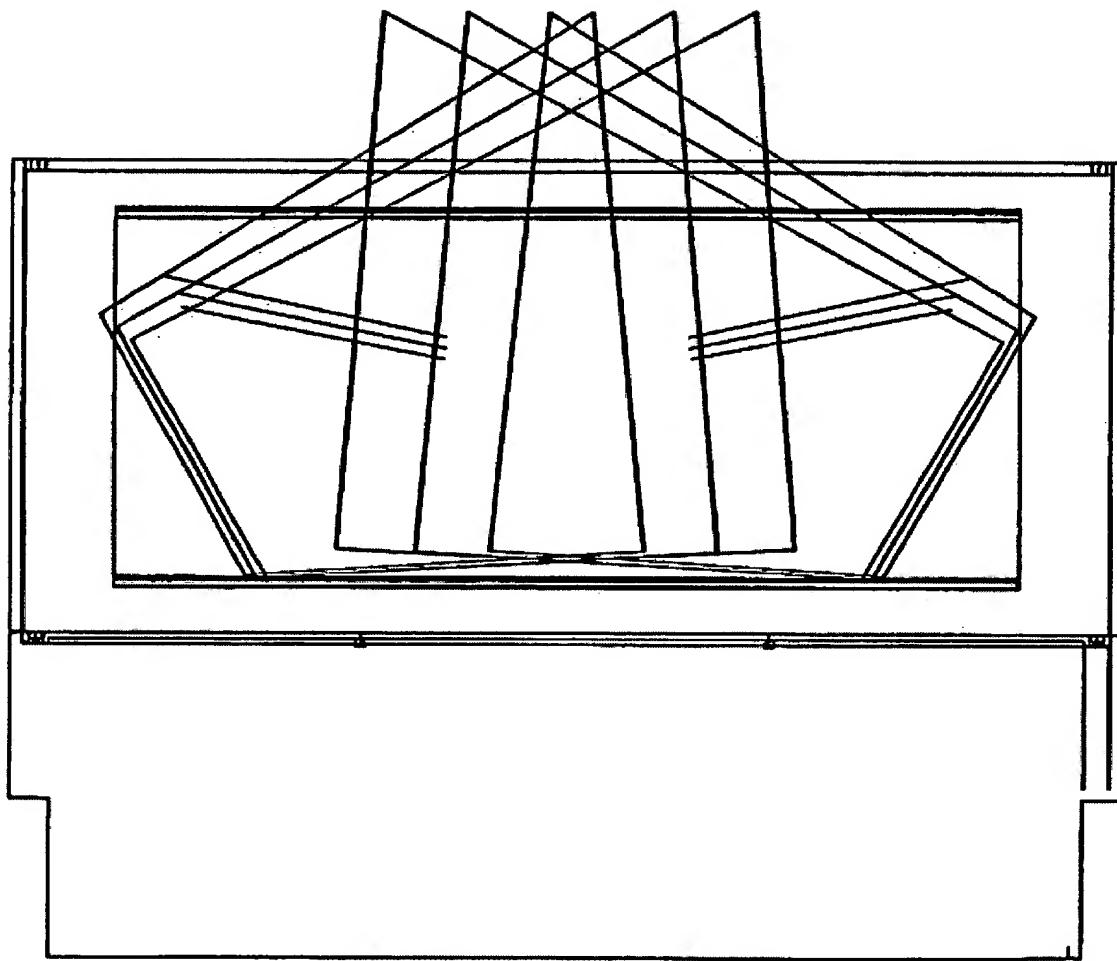
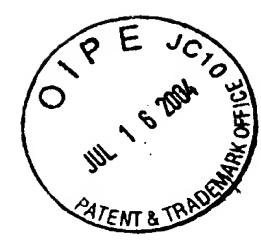


FIG. 5U3

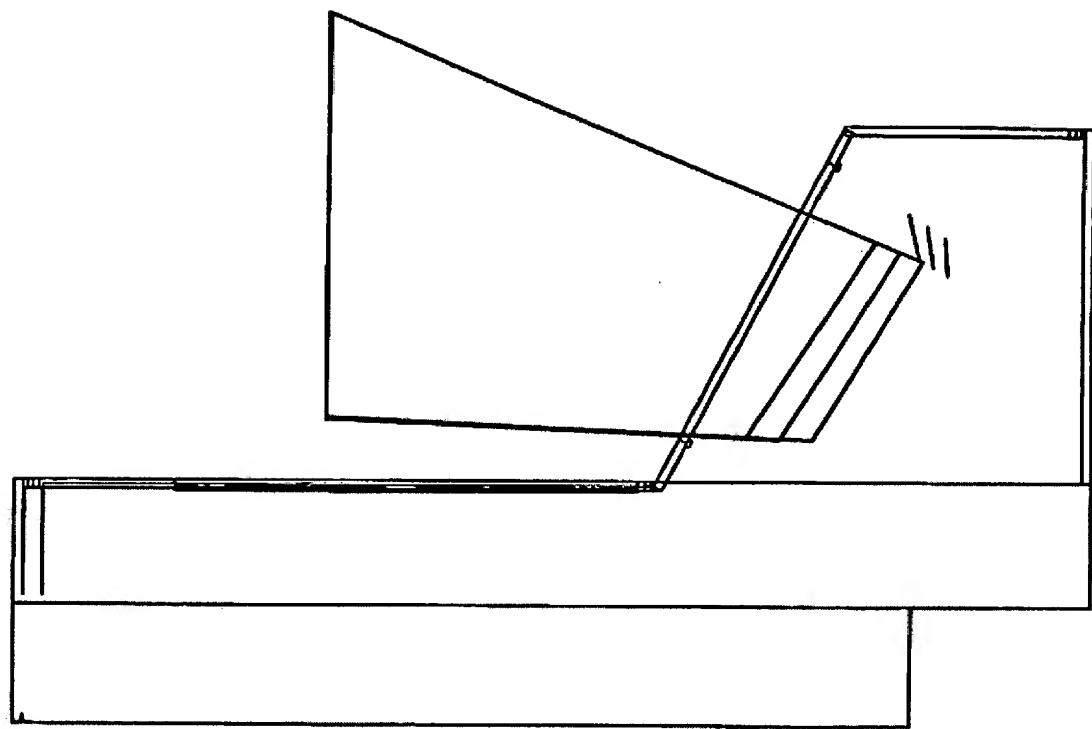


FIG. 5U4

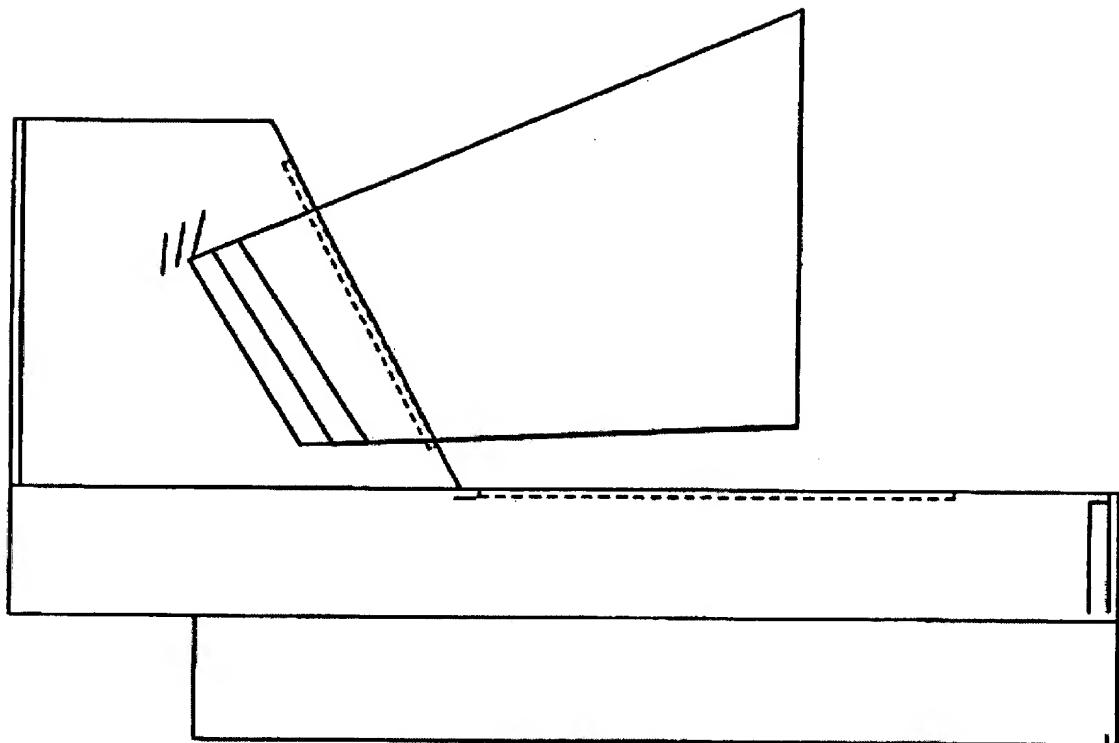


FIG. 5U5

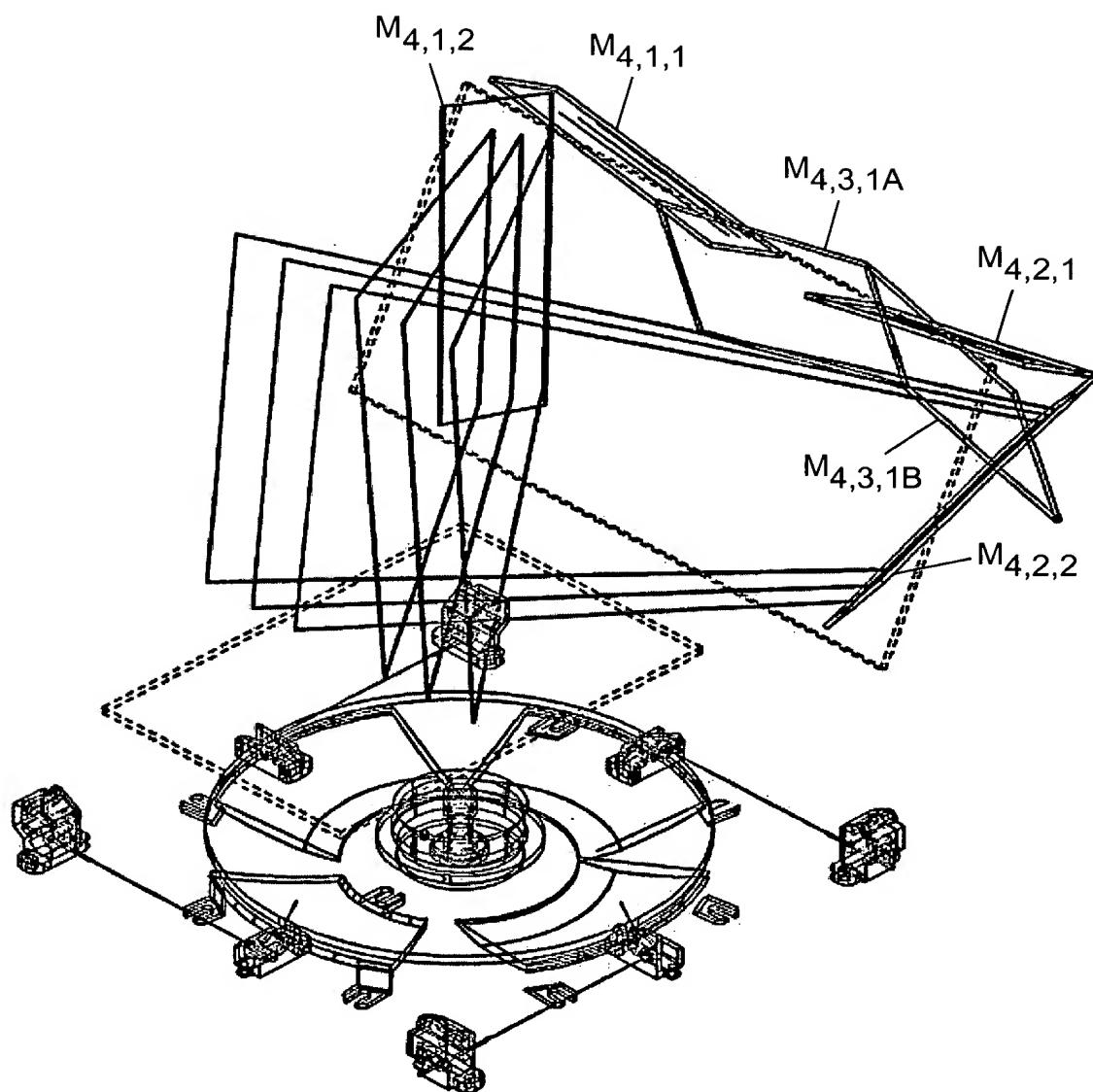


FIG. 5V1

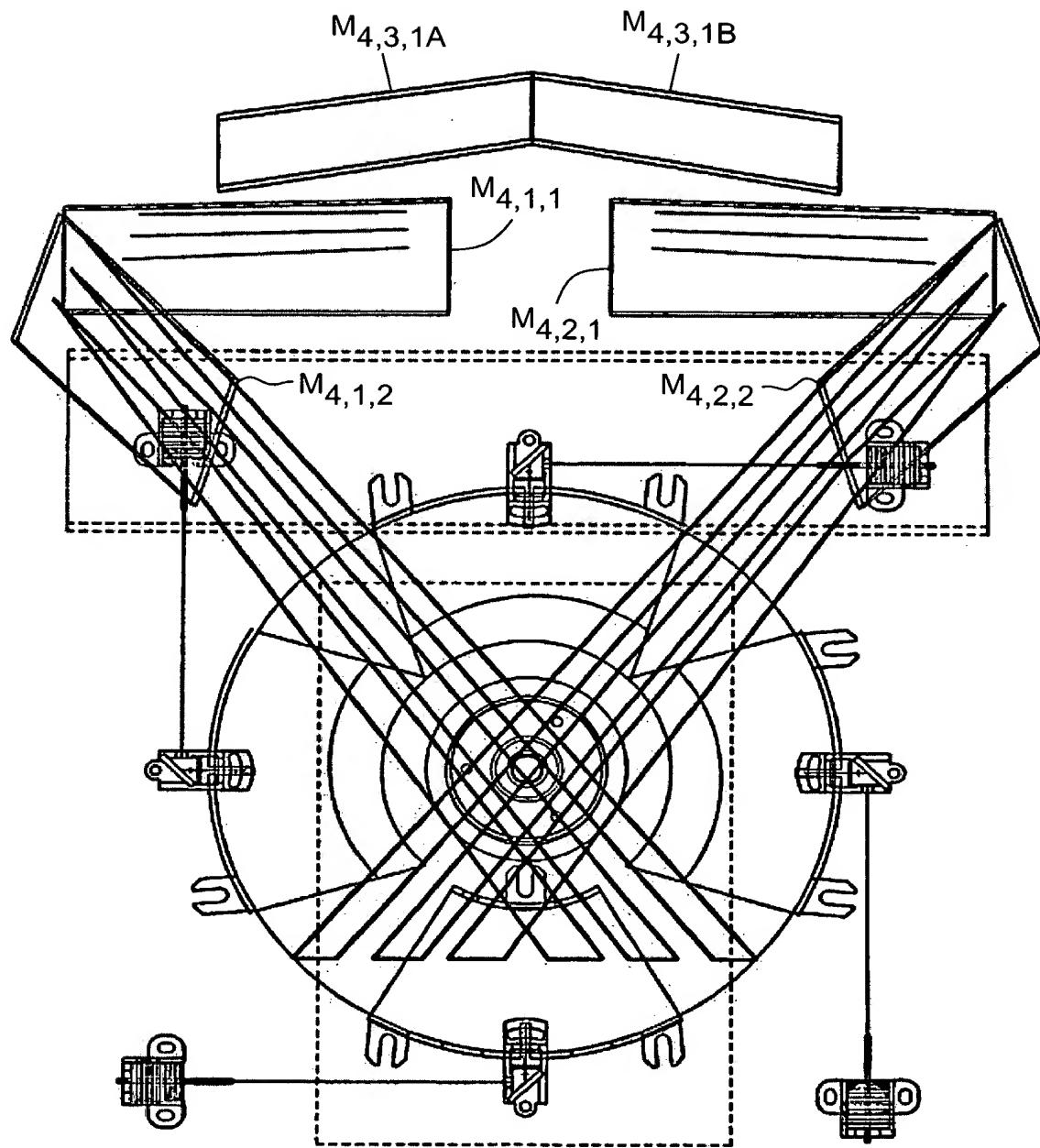
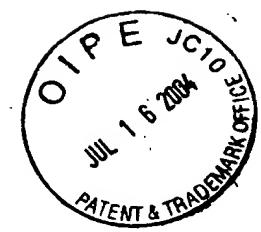


FIG. 5V2

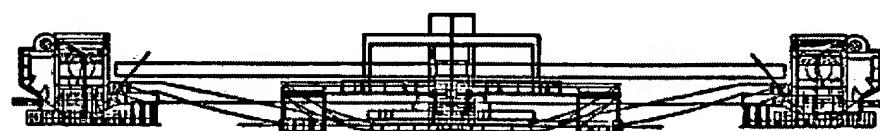
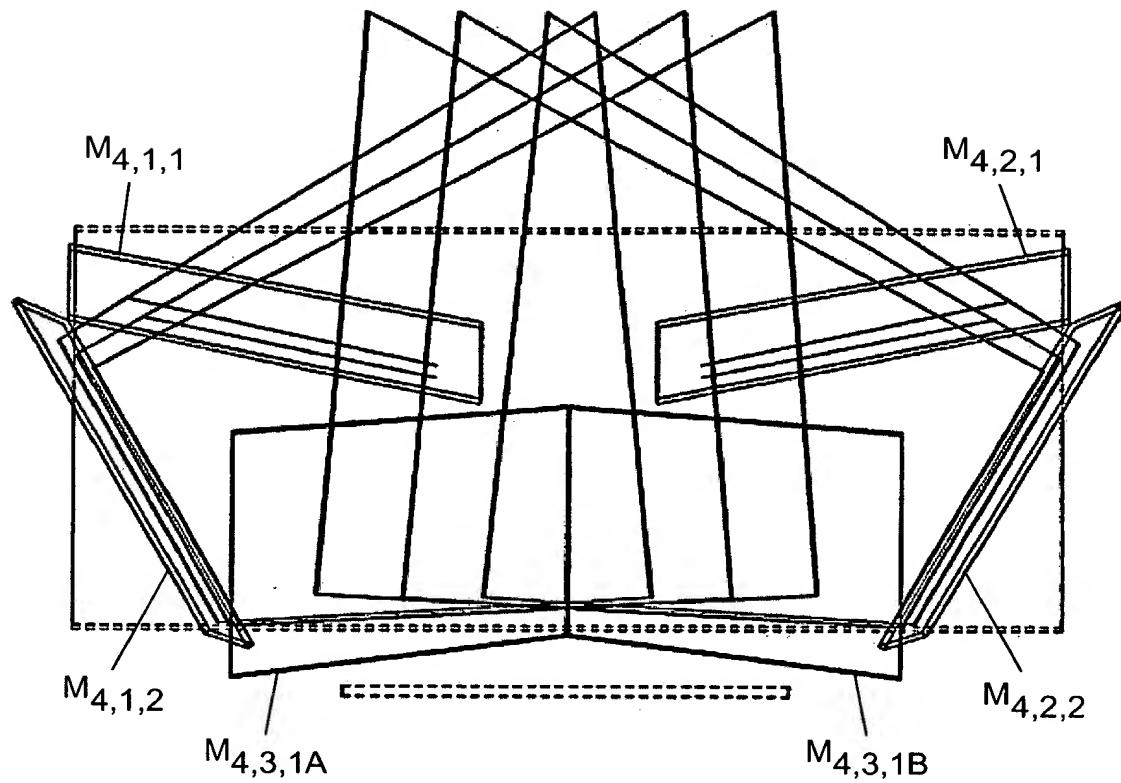
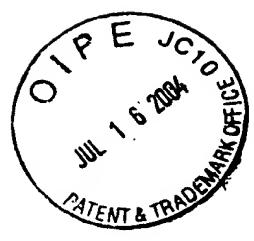


FIG. 5V3

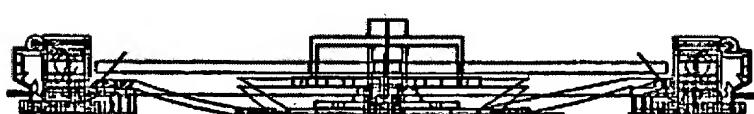
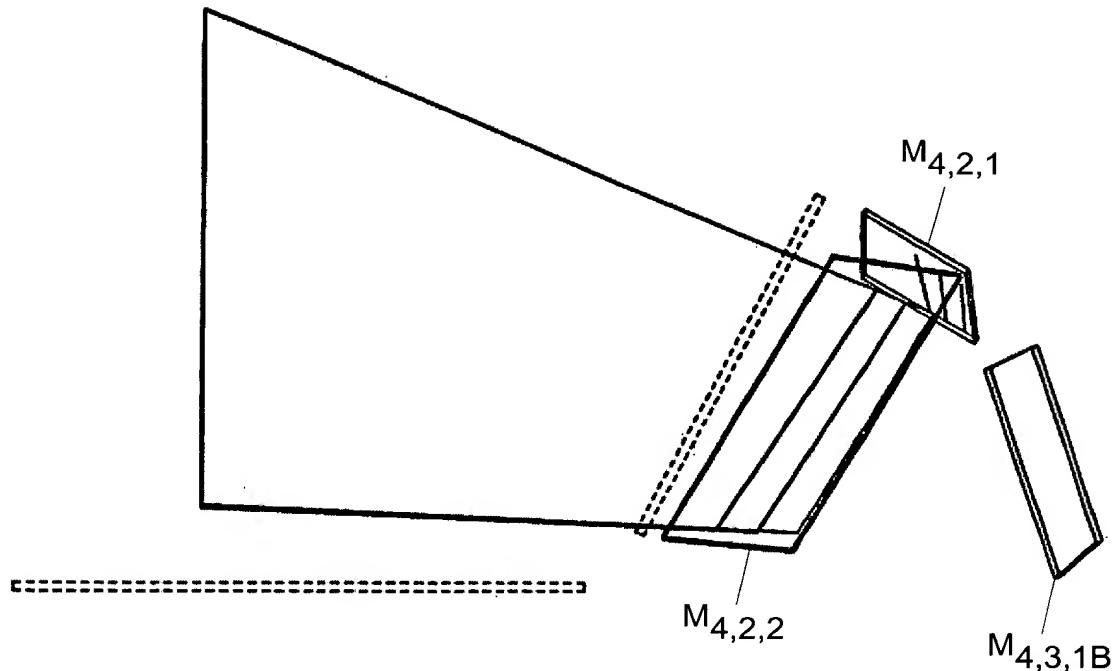
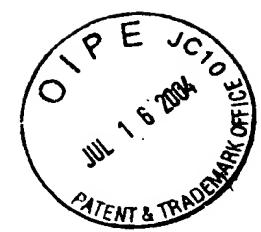


FIG. 5V4

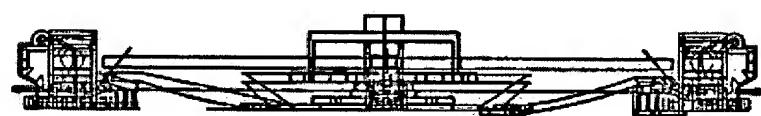
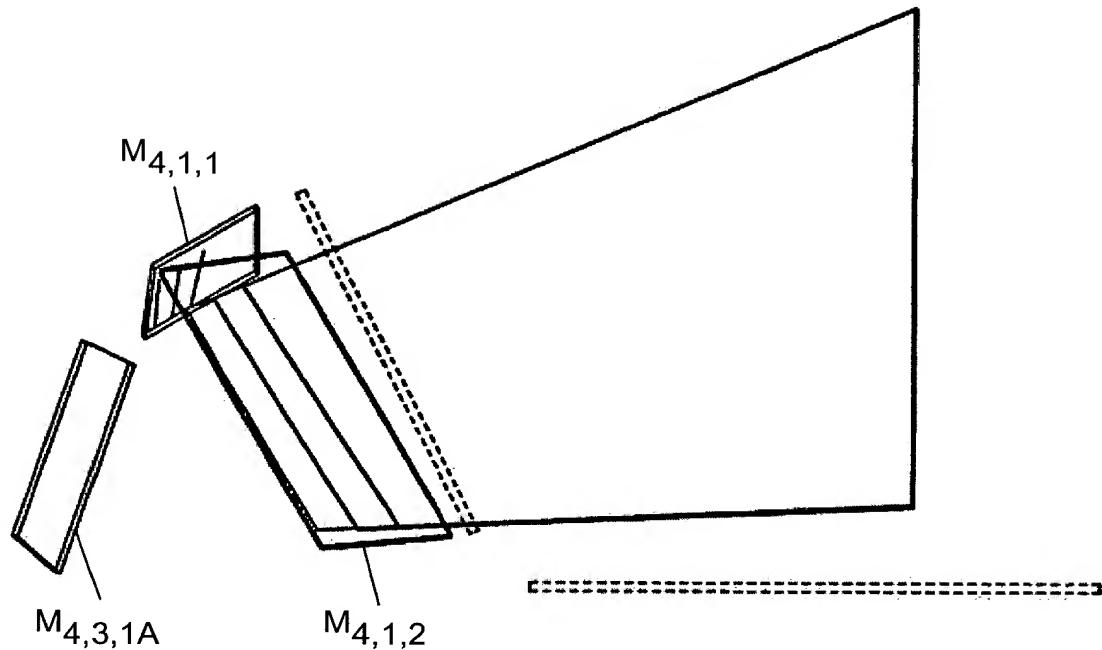


FIG. 5V5

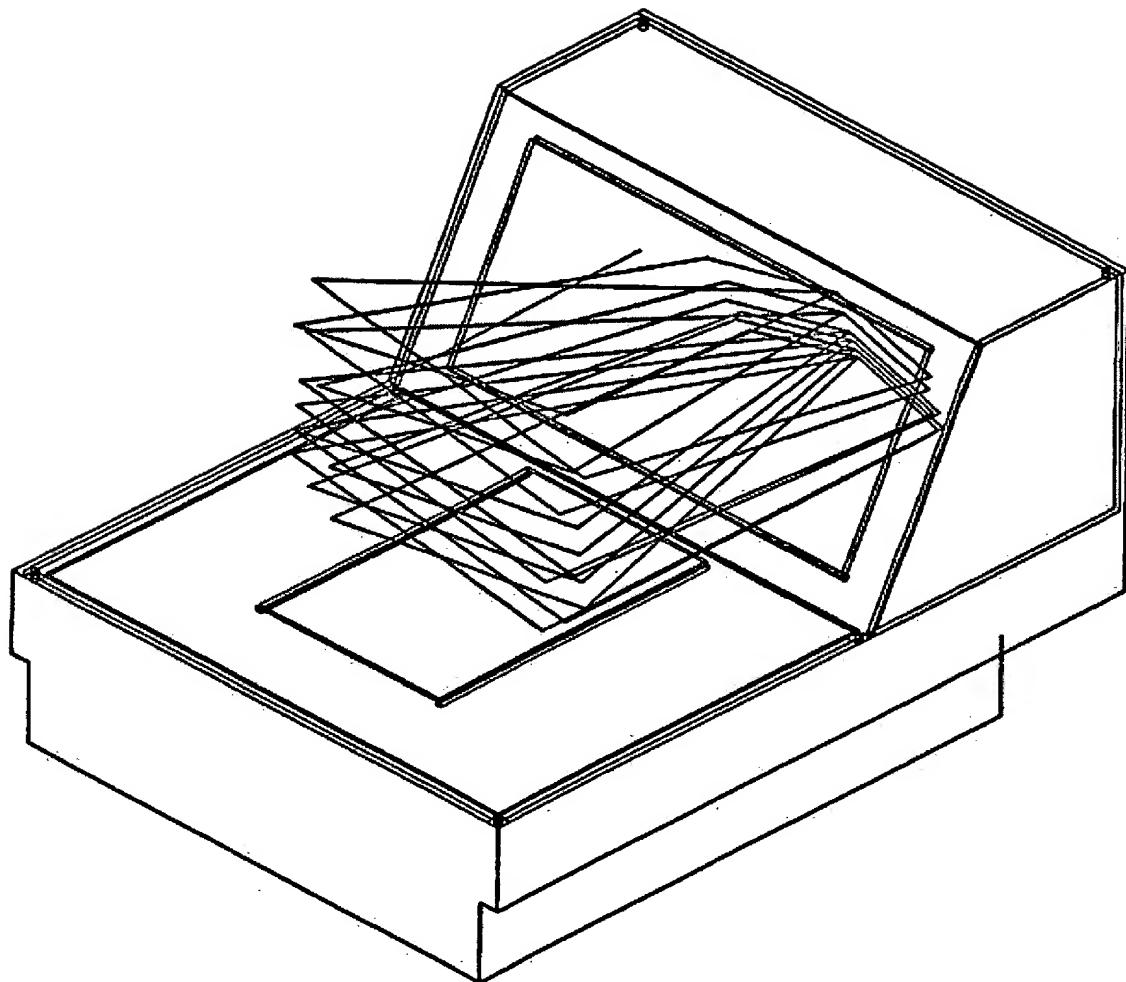
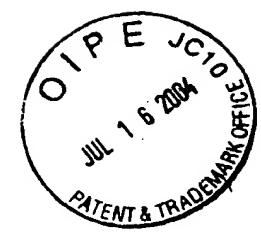
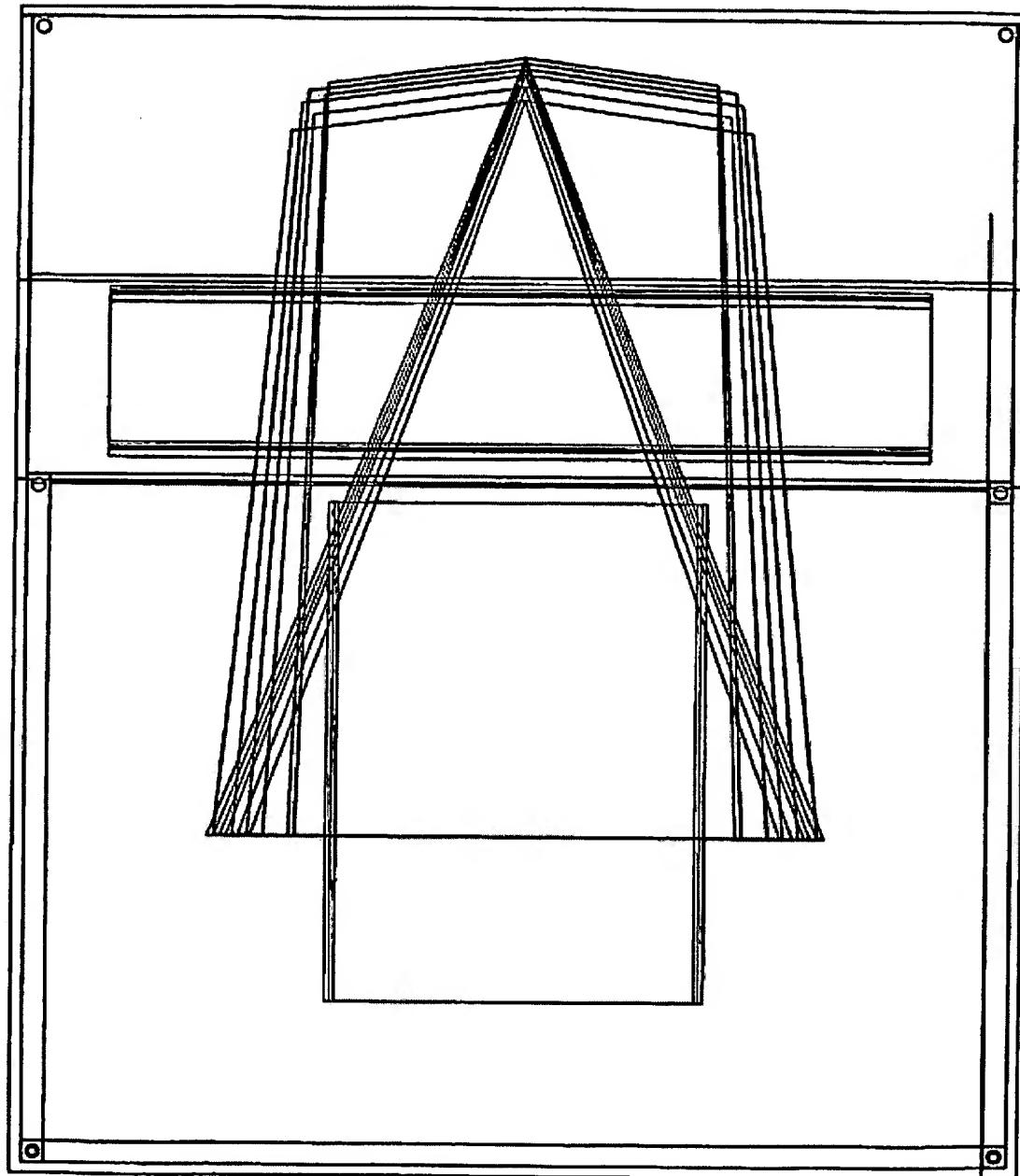
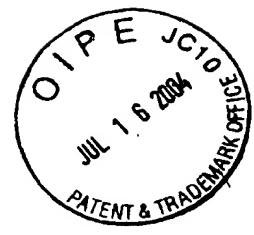


FIG. 5W1



**FIG. 5W2**

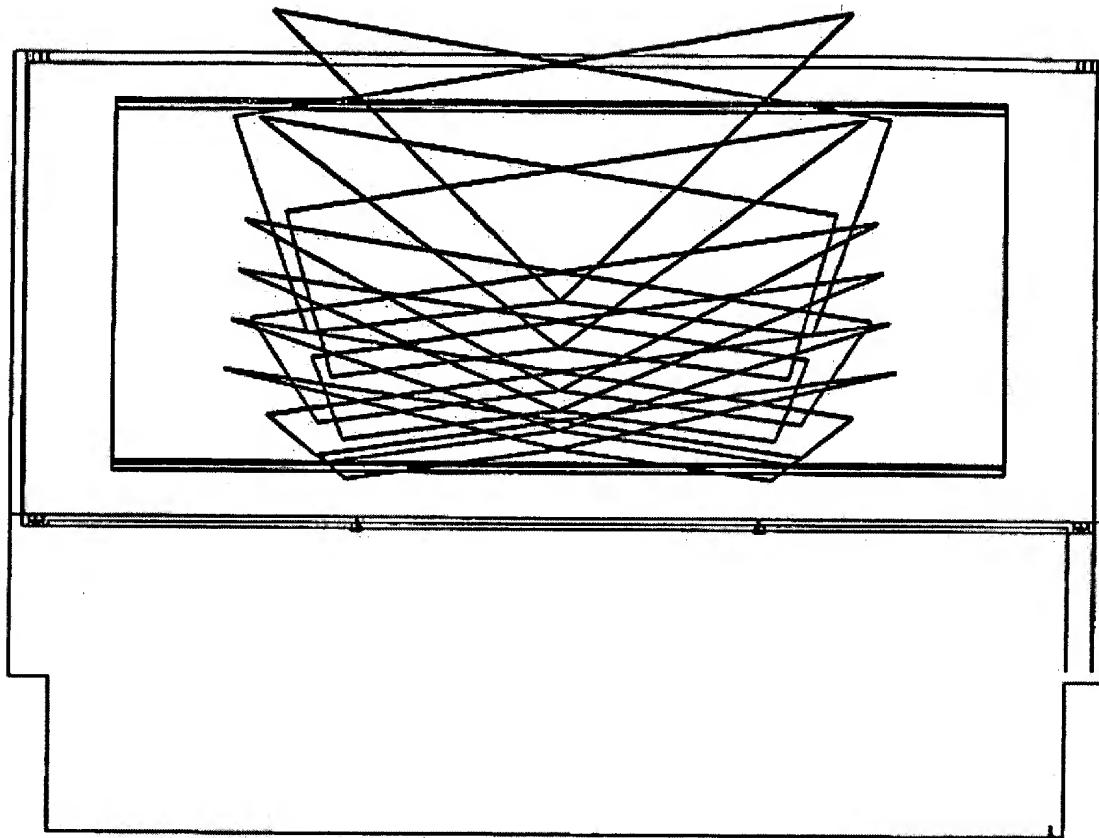


FIG. 5W3

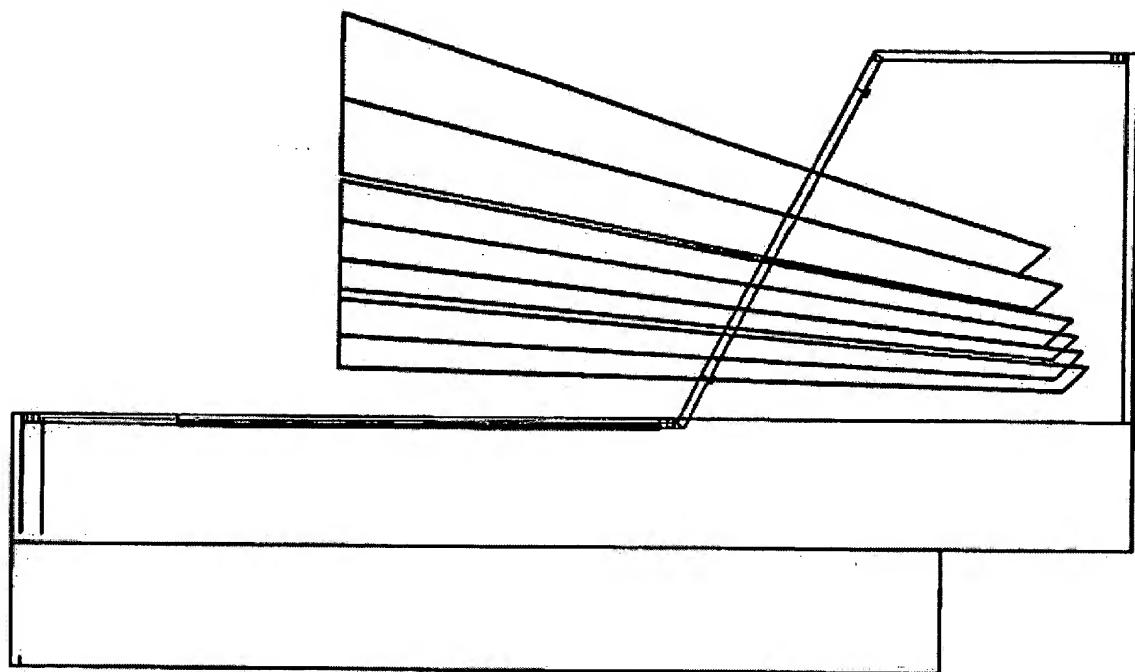


FIG. 5W4

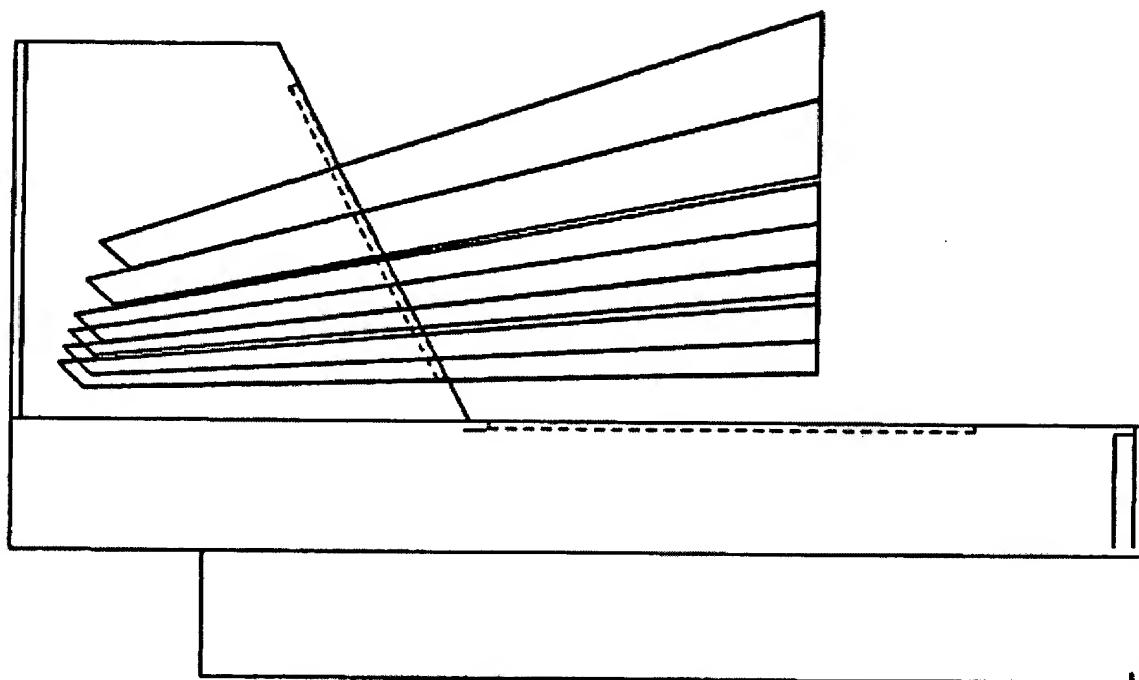
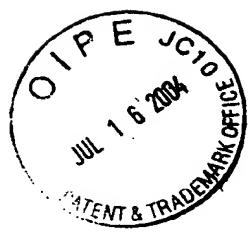


FIG. 5W5

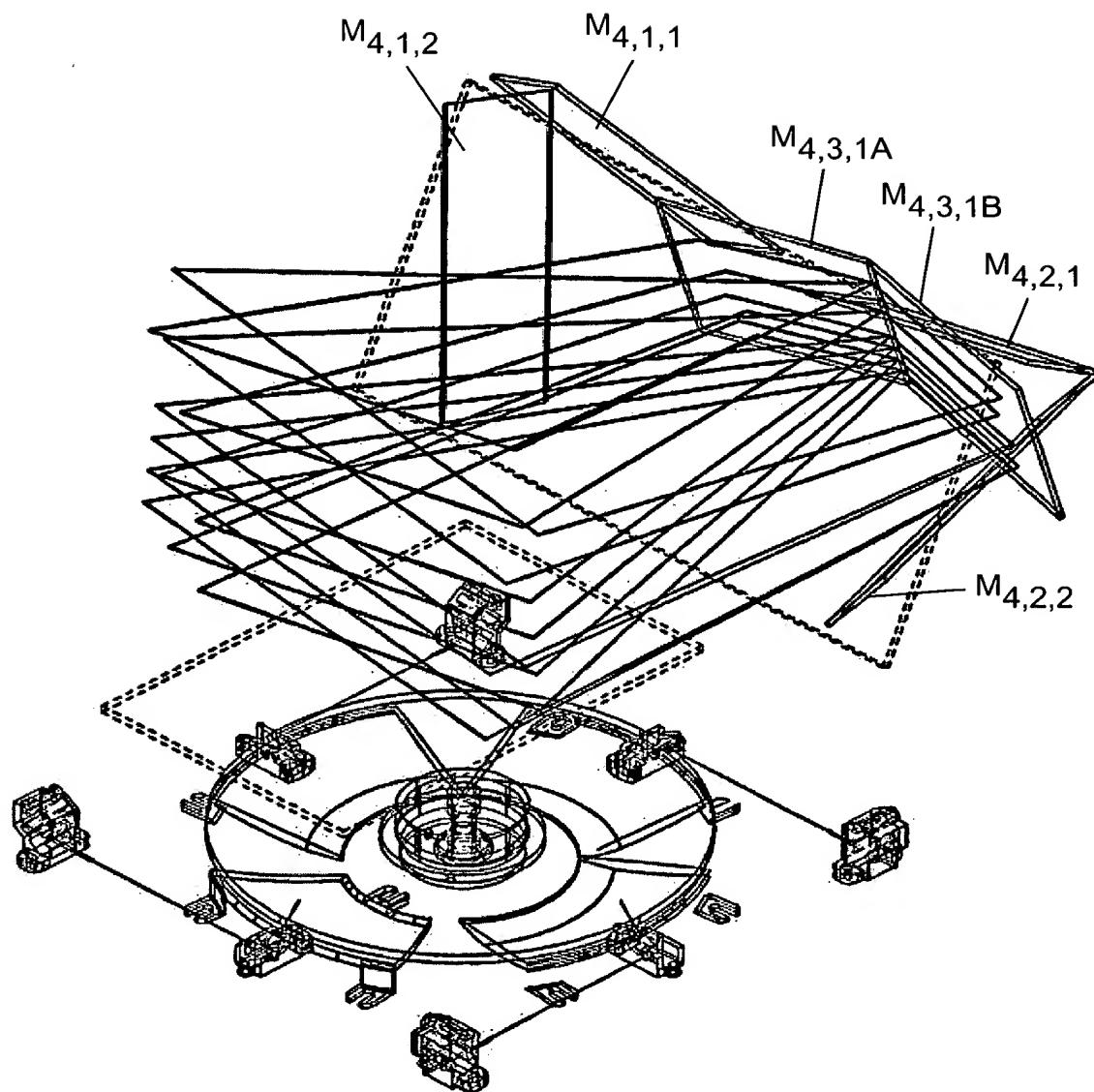
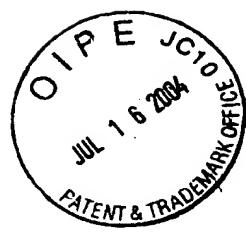


FIG. 5X1

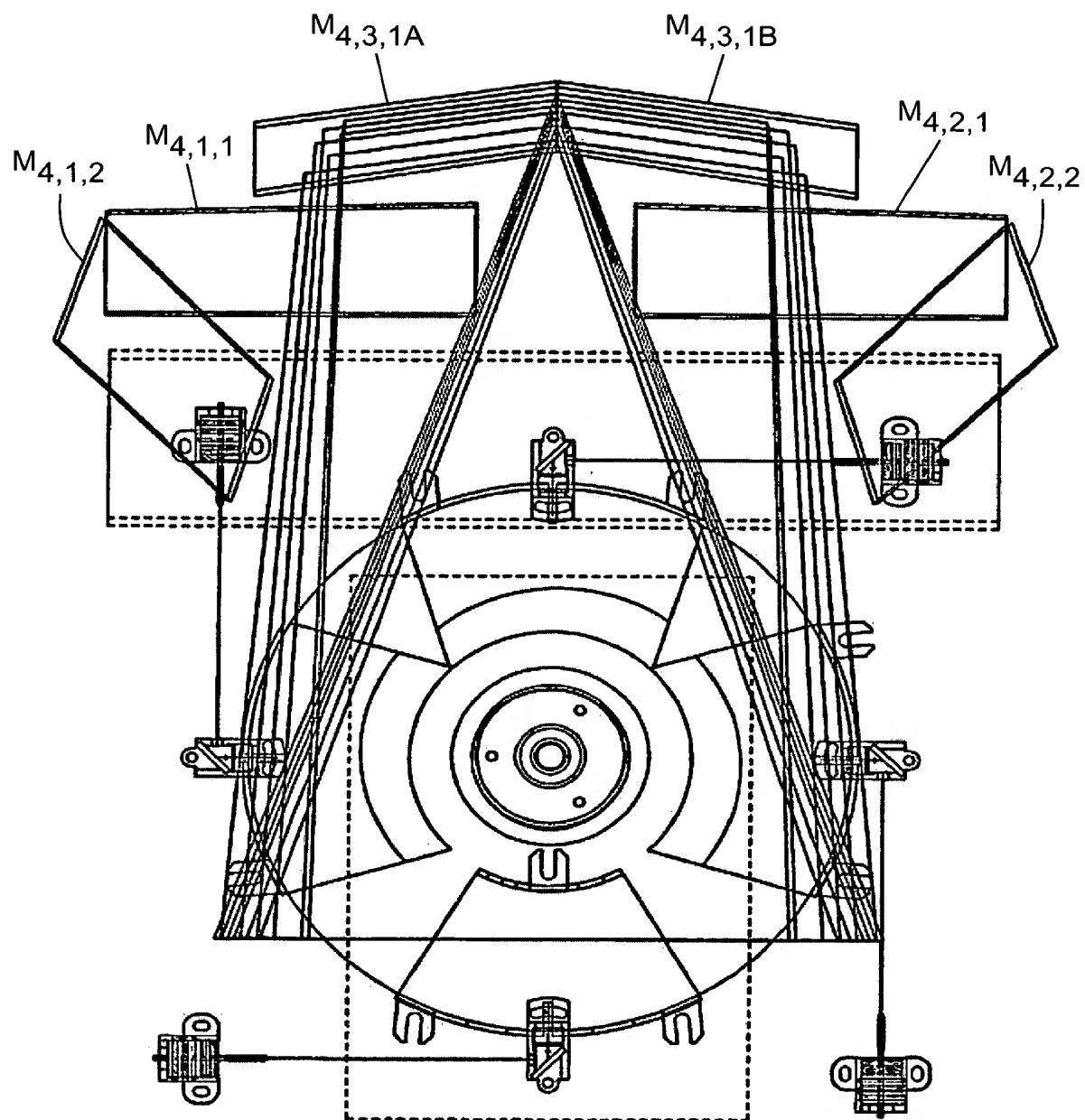


FIG. 5X2

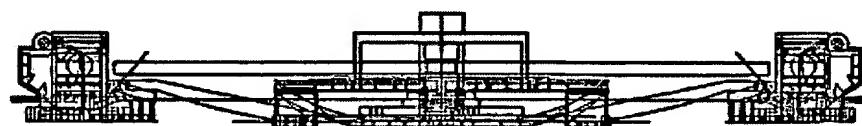
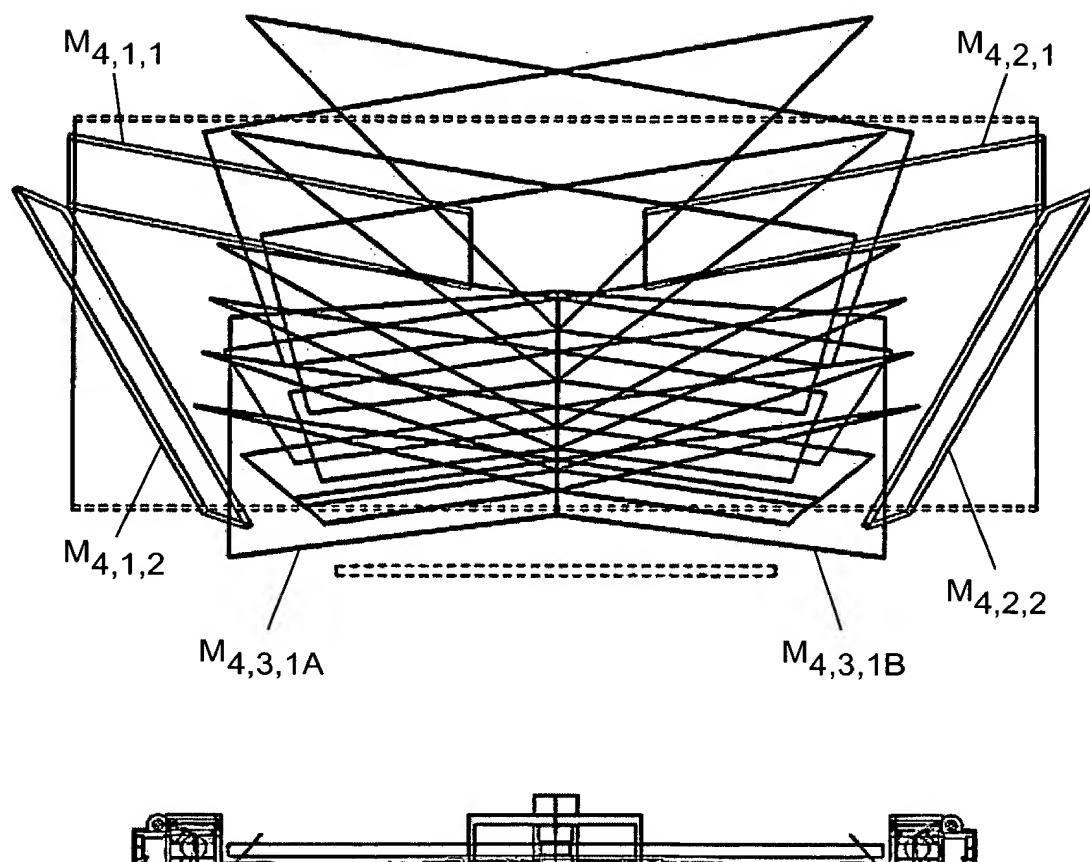
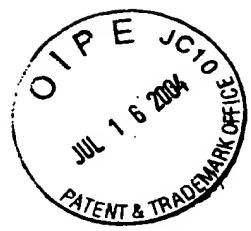


FIG. 5X3

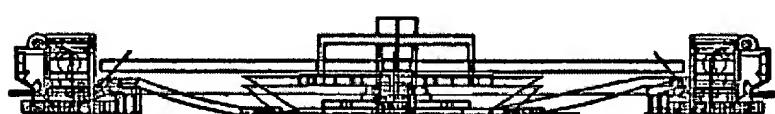
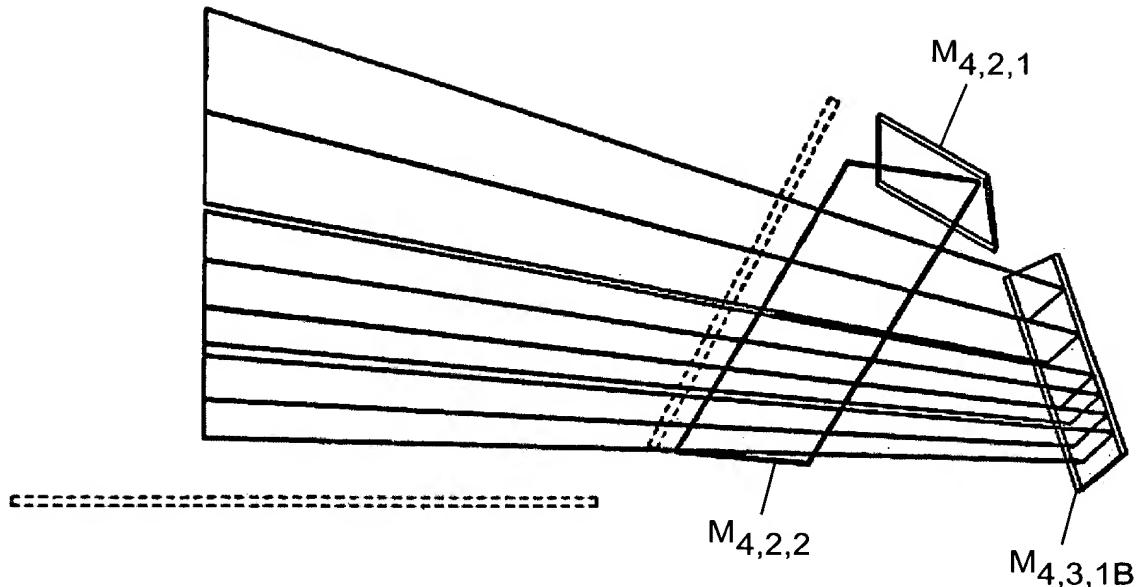
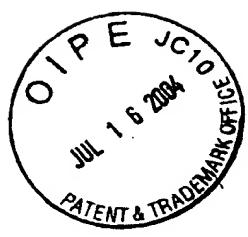


FIG. 5X4

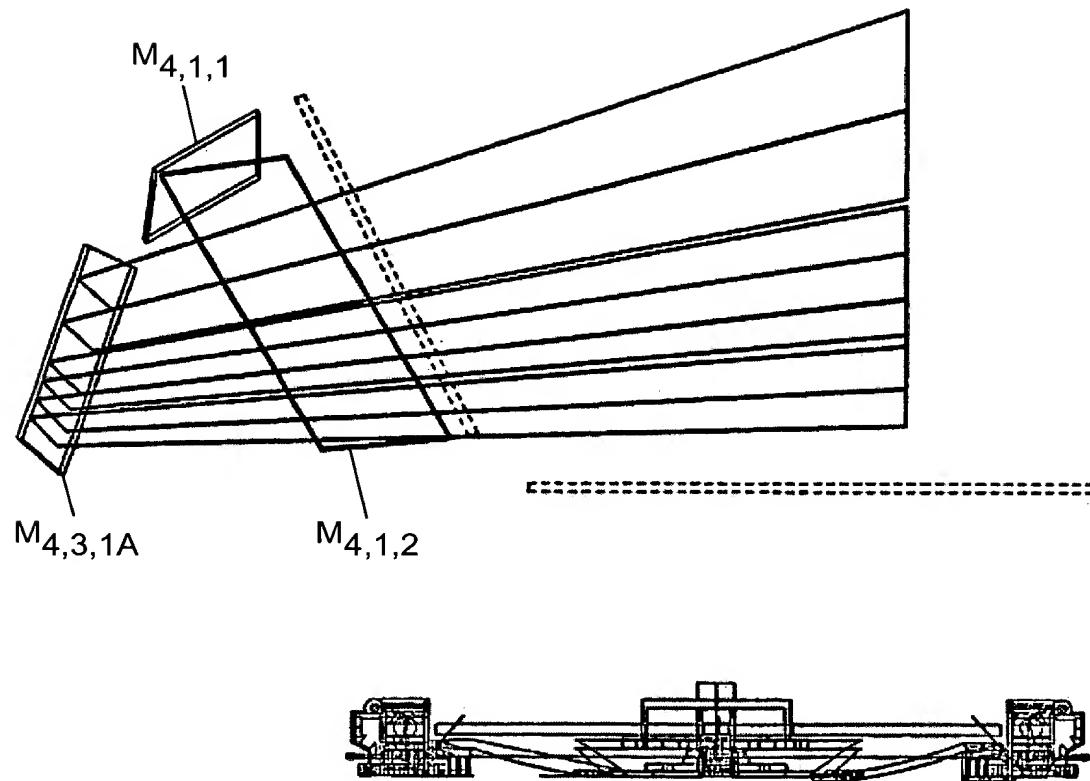


FIG. 5X5

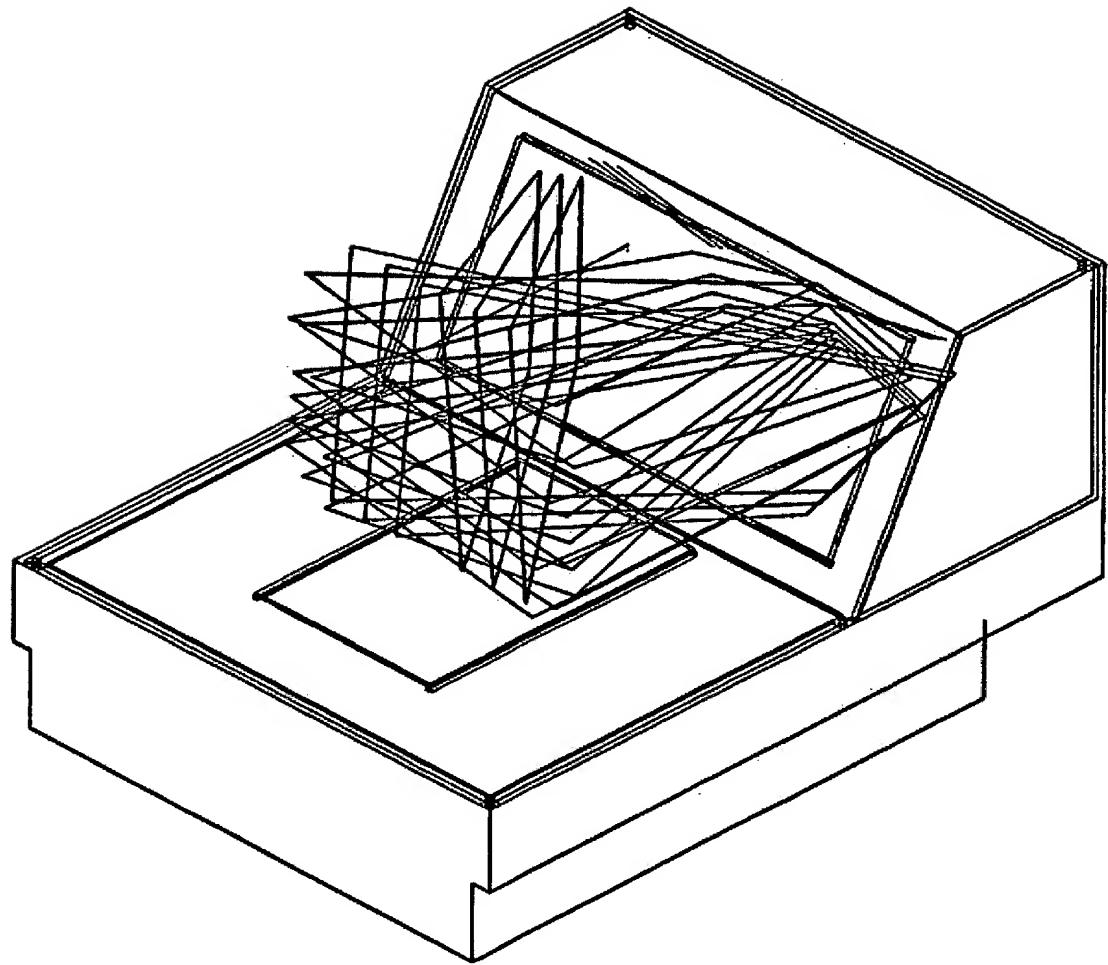


FIG. 5Y1

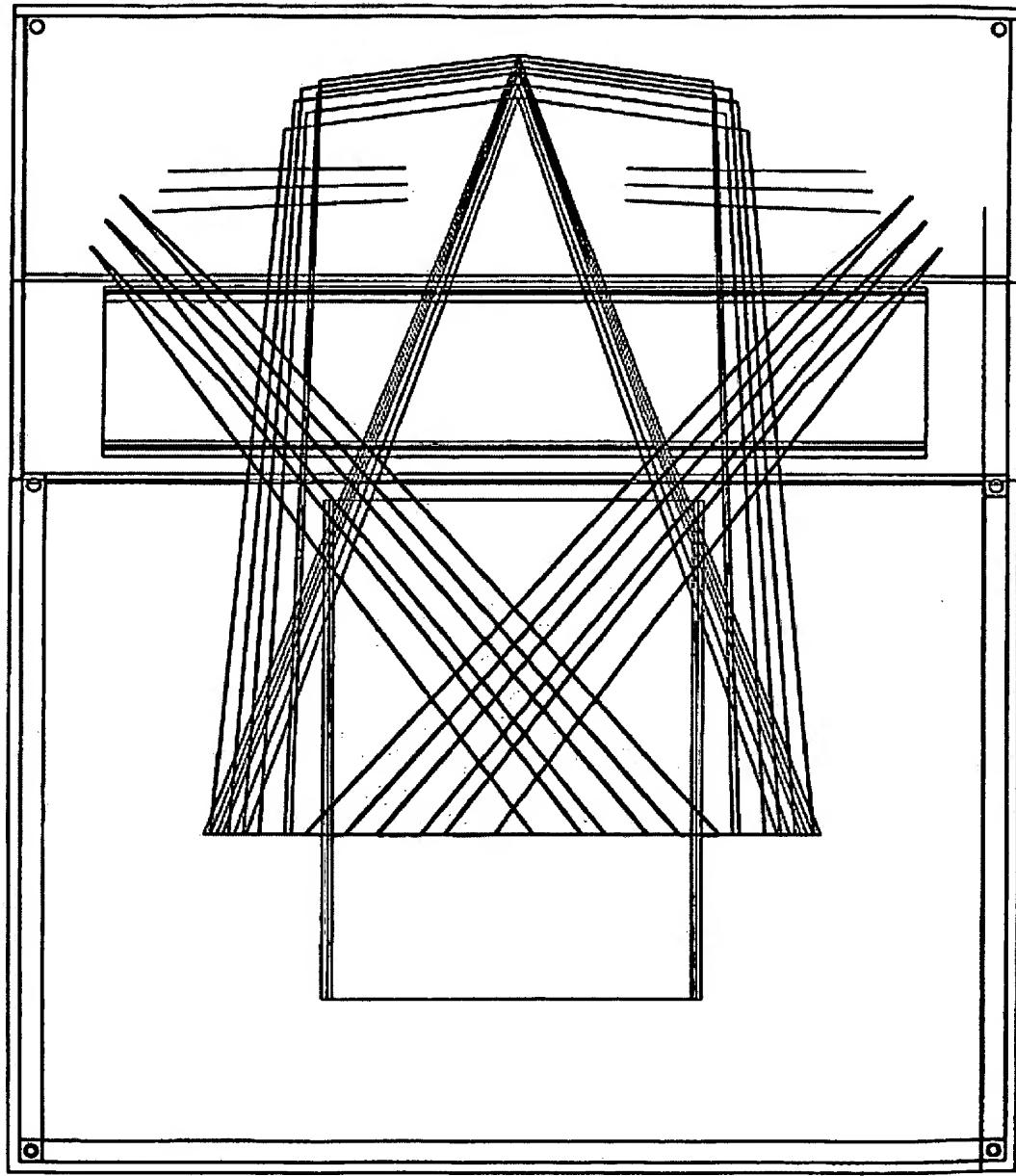


FIG. 5Y2

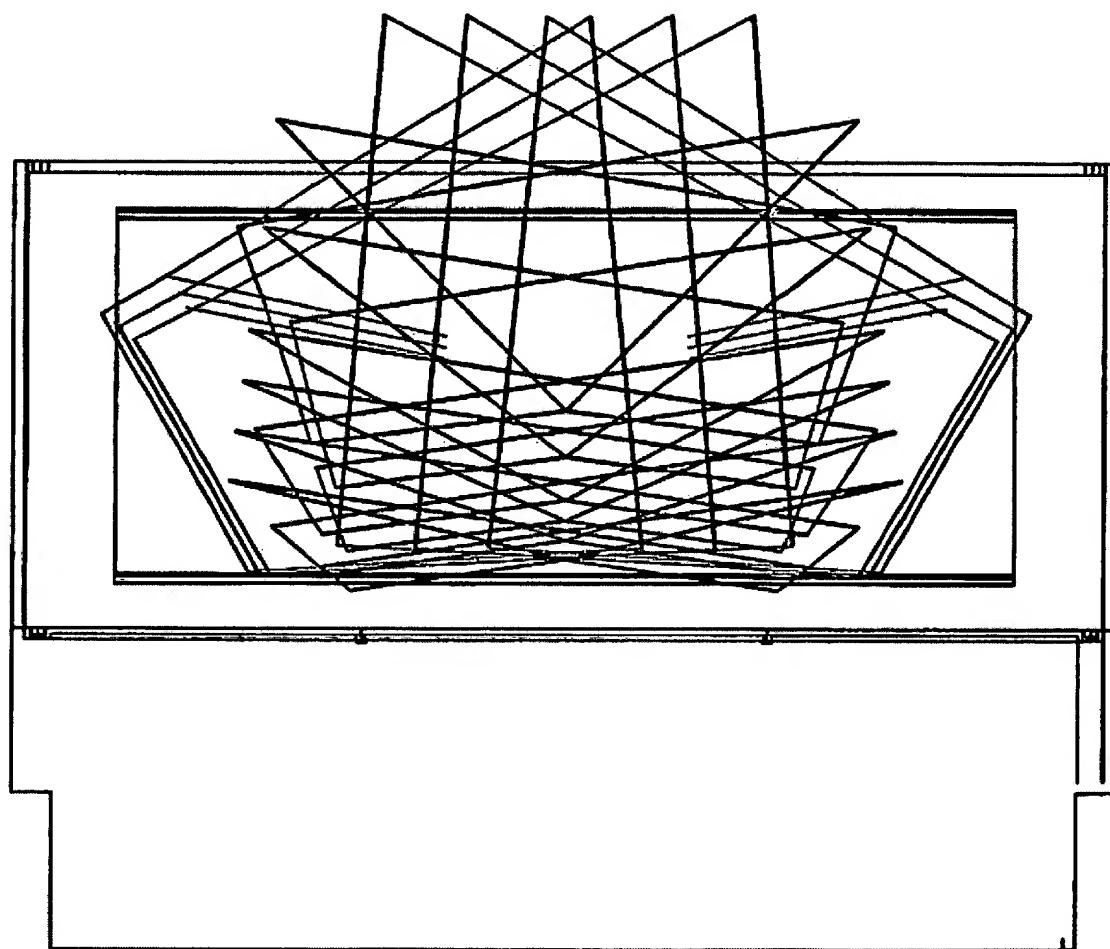
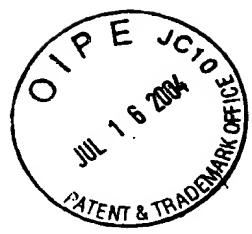


FIG. 5Y3

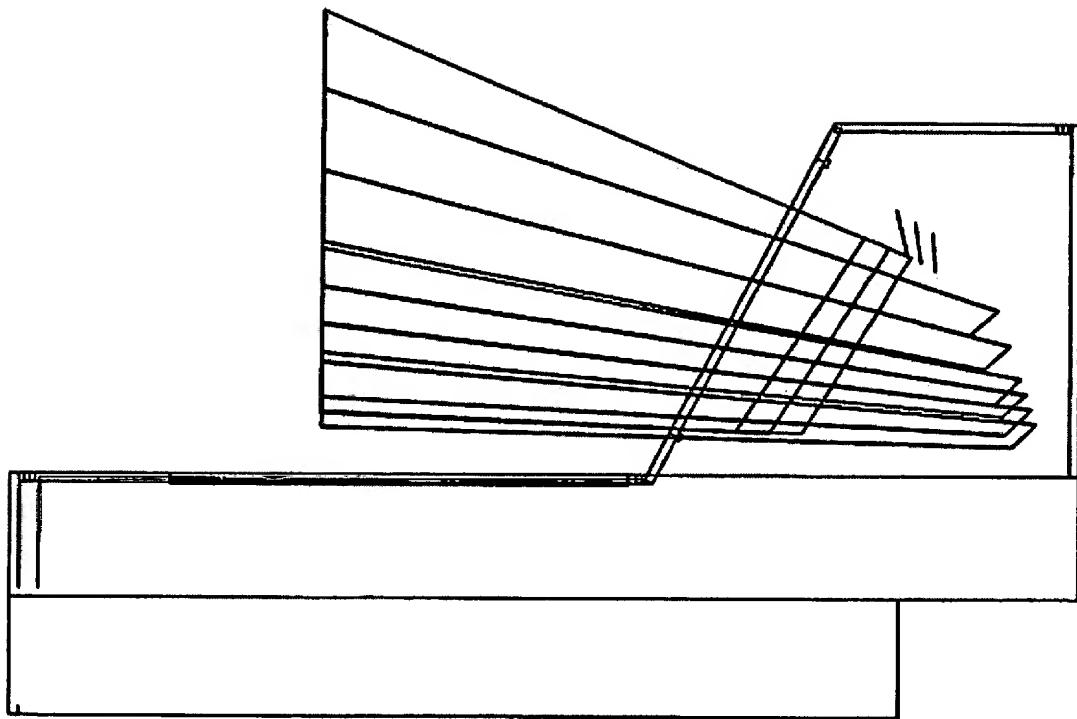
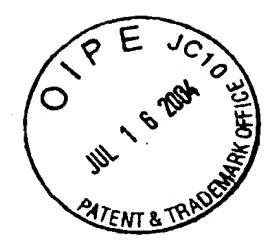


FIG. 5Y4

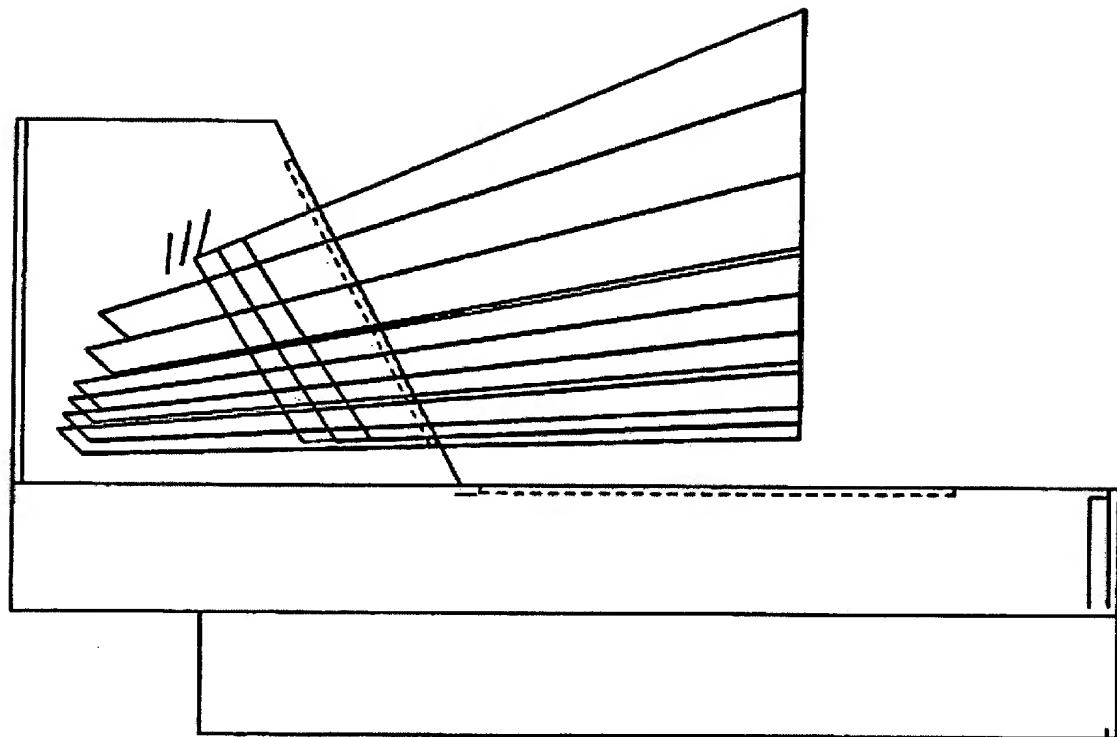


FIG. 5Y5

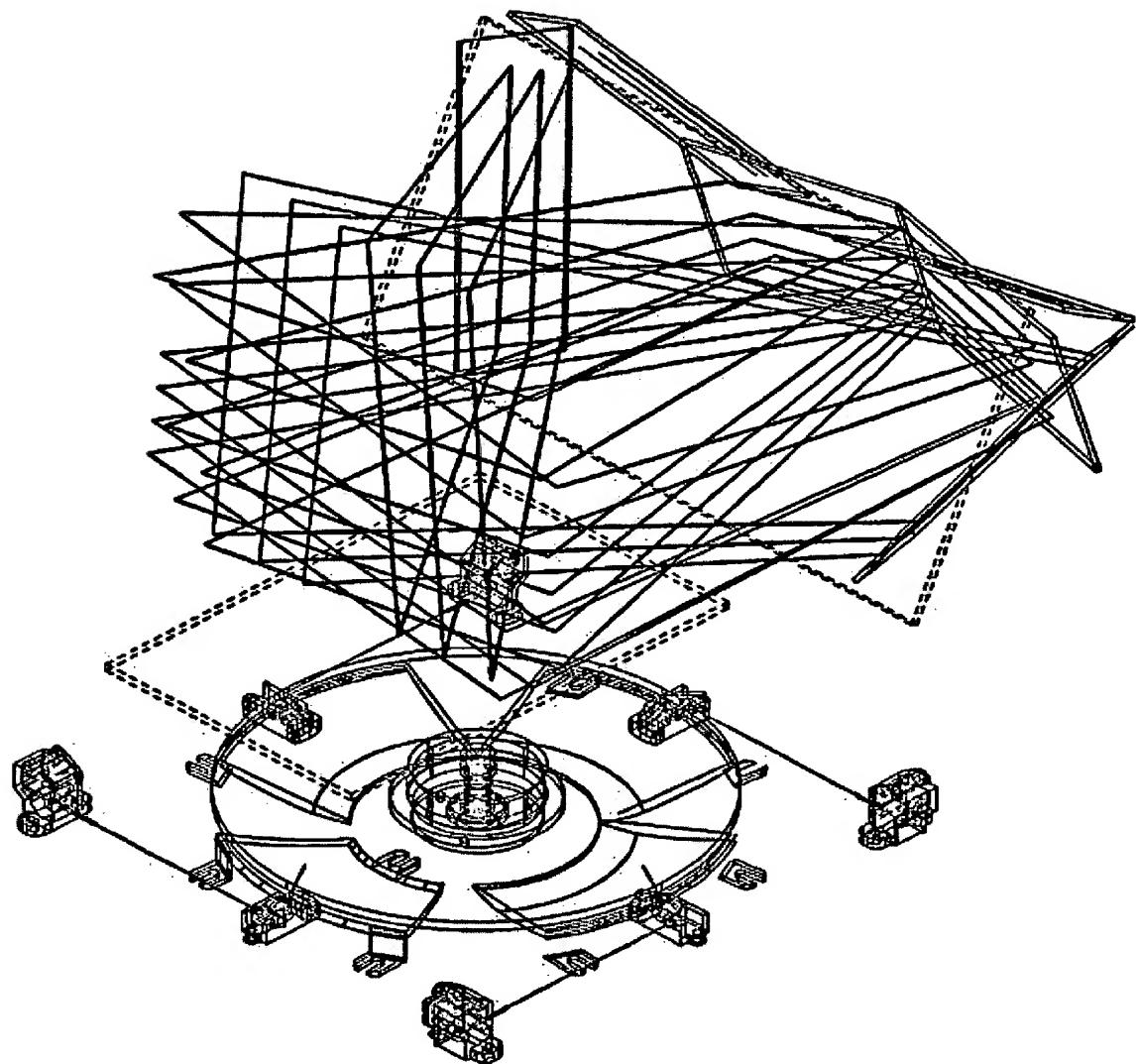
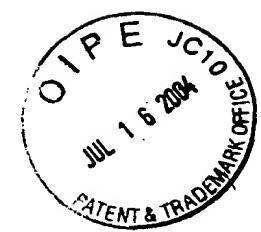


FIG. 5Z1

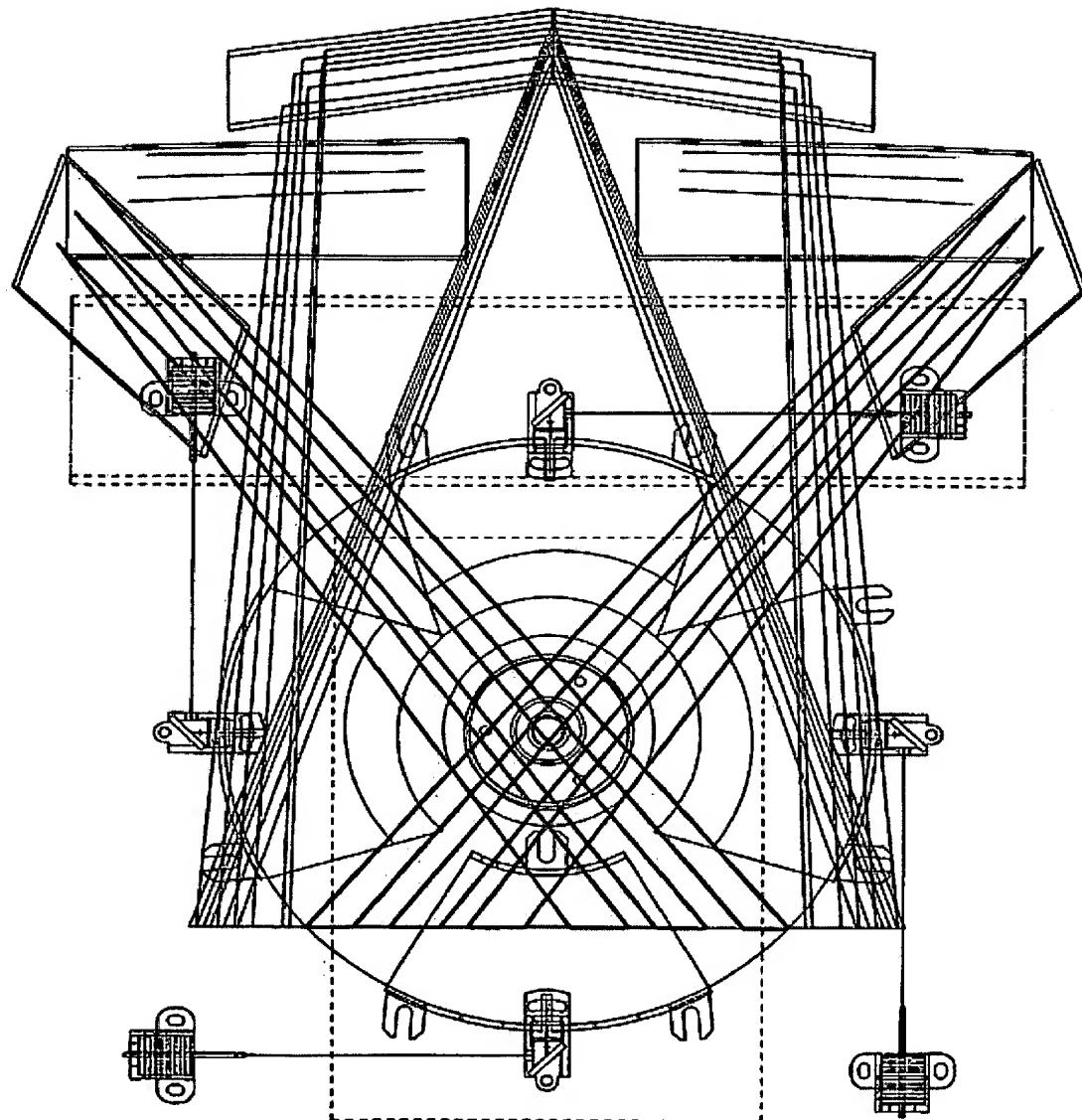
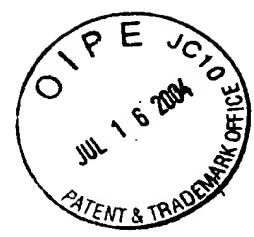


FIG. 5Z2

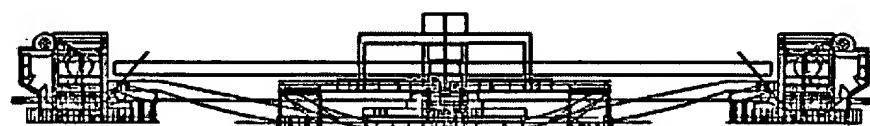
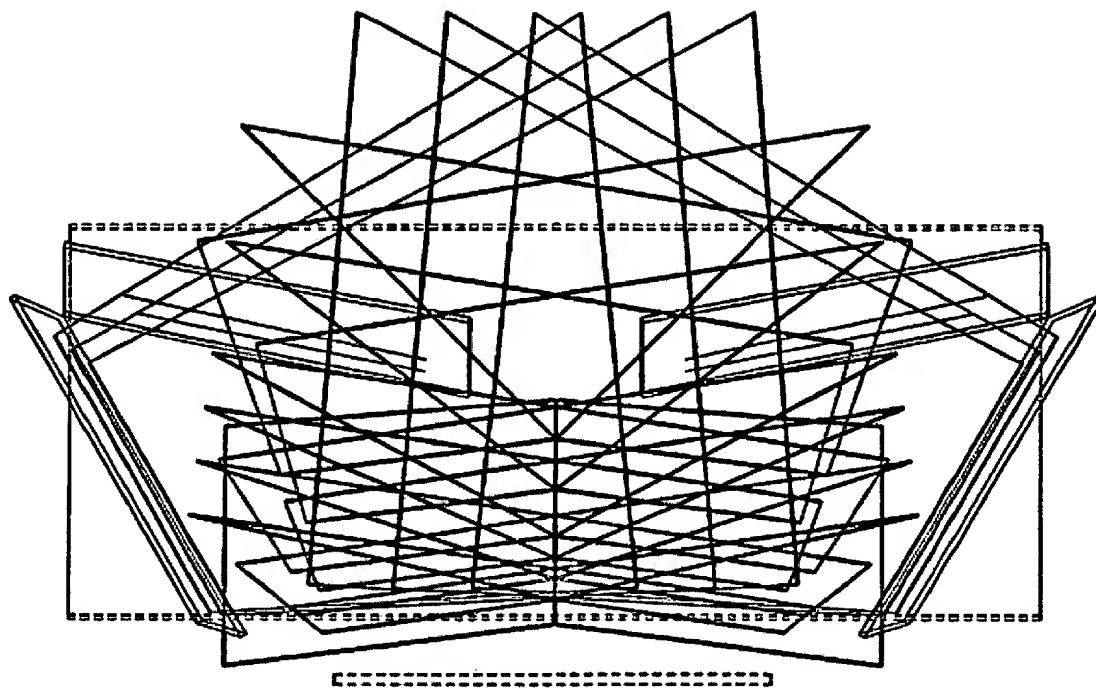
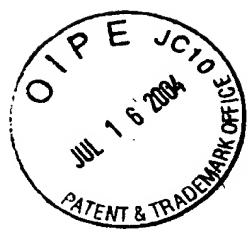


FIG. 5Z3

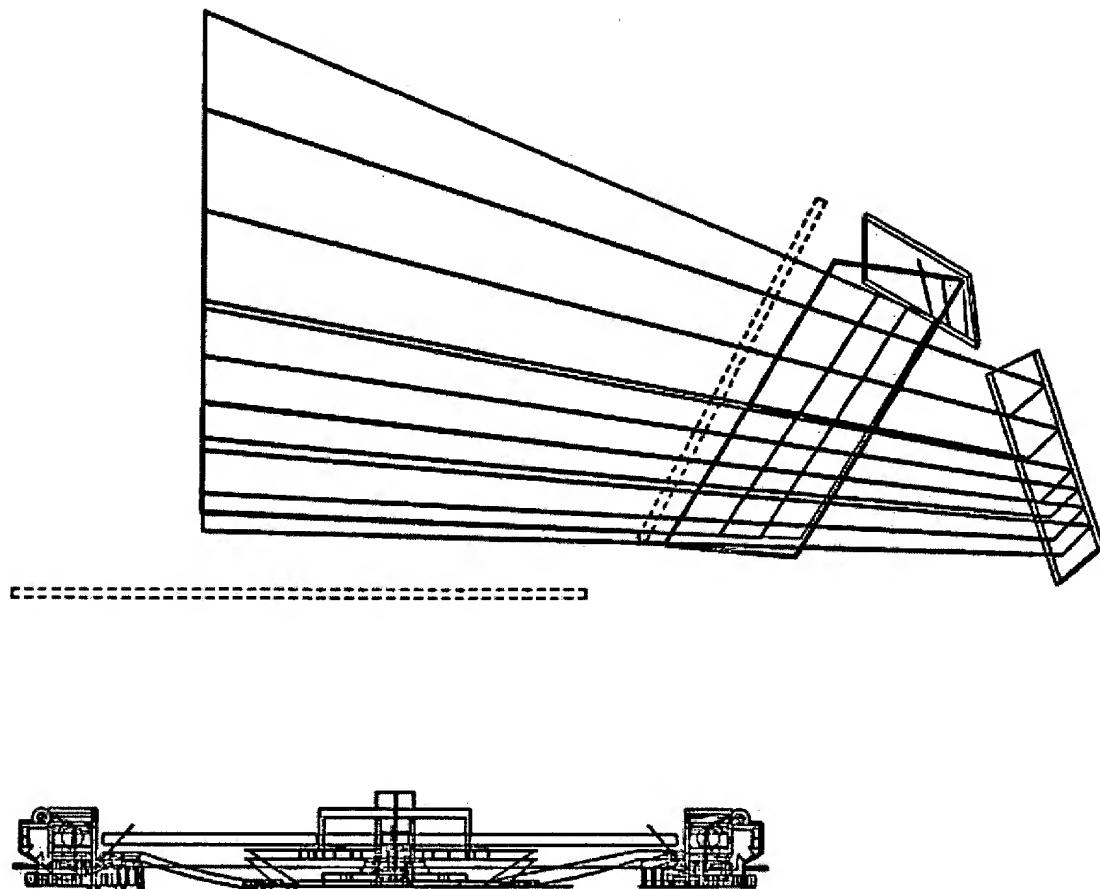


FIG. 5Z4

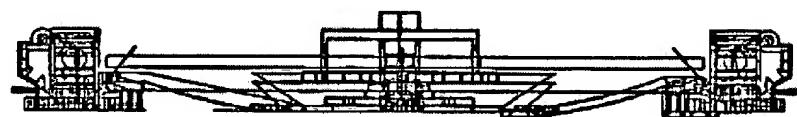
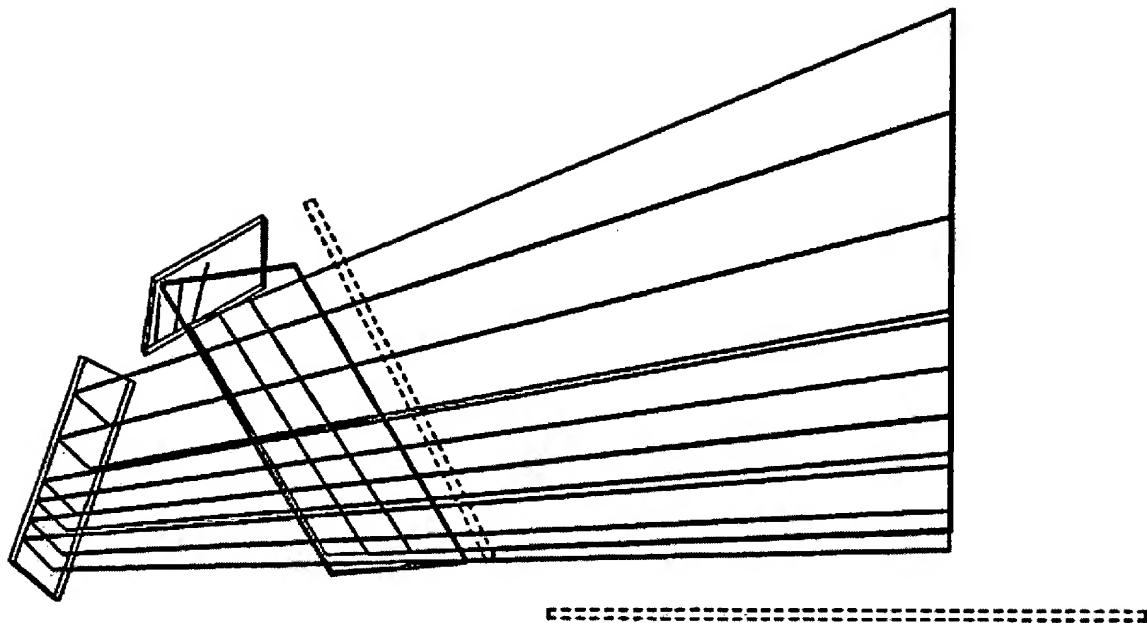


FIG. 5Z5

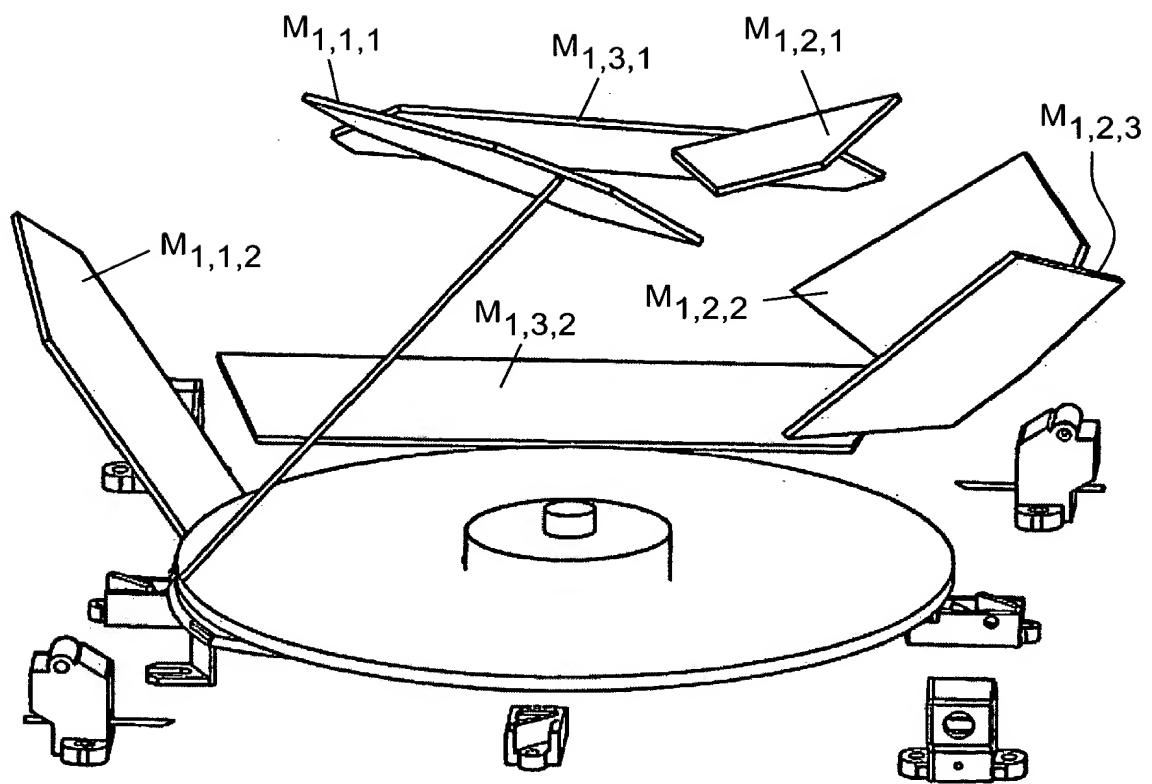
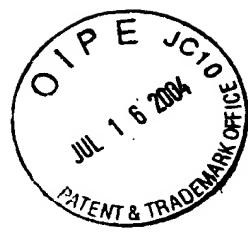


FIG. 6A1



	N	O	P	Q	R	S	T	U	V	W	X
1											
2											
3											
4	Facet	7									
5	x	y	z								
6	-0.616	0.000	0.788								
7				End		Middle			End		
8	x	y	z		x	y	z		x	y	z
9	0.419	0.416	0.807		0.468	0.249	0.848		0.494	0.048	0.868
10	-0.253	0.917	-0.310		-0.316	0.832	-0.455		-0.387	0.704	-0.596
11	-0.469	-0.414	0.781		-0.537	-0.527	0.659		-0.603	-0.626	0.494
12											
13											
14	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
15	x	y	z	x	y	z	x	y	z		
16	3.900	2.436	2.770	1.700	4.102	1.300					
17	4.100	1.879	2.400	3.300	4.400	1.980					
18	3.800	0.137	1.800	3.400	3.990	1.500					
19	3.150	-0.737	1.800	2.300	2.427	-0.625					
20	2.500	-0.159	2.450	1.700	2.524	-0.625					
21	2.650	0.757	2.770	1.050	3.101	-0.050					
22											
23											
24											

FIG. 6A2



	A	B	C	D	E	F	G	H	I	J	K	L
1	Station 1											
2												
3												
4	High Elevation Left Skew	Facet	9									
5	(G2)	x	y	z								
6	Vector from Module	-0.616	0.000	0.788								
7												
8		x	y	z	x	y	z	x	y	z		
9	Output Vectors From Disk	0.378	0.445	0.812	0.441	0.235	0.866	0.464	0.068	0.883		
10	First Mirror Reflected Directions	-0.269	0.927	-0.263	-0.349	0.823	-0.448	-0.408	0.717	-0.565		
11	Second Mirror Reflected Directions	-0.479	-0.367	0.797	-0.566	-0.512	0.647	-0.621	-0.595	0.510		
12	Third Mirror Reflected Directions											
13												
14												
15		x	y	z	x	y	z	x	y	z		
16	1	3.900	2.436	2.770	1.700	4.102	1.300					
17	2	4.100	1.879	2.400	3.300	4.400	1.980					
18	3	3.800	0.137	1.800	3.400	3.990	1.500					
19	4	3.150	-0.737	1.800	2.300	2.427	-0.625					
20	5	2.500	-0.159	2.450	1.700	2.524	-0.625					
21	6	2.650	0.757	2.770	1.050	3.101	-0.050					
22	7											
23	8											

FIG. 6A3

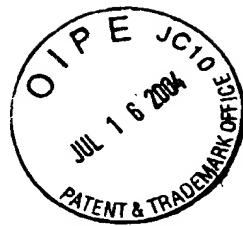


FIG. 6A4

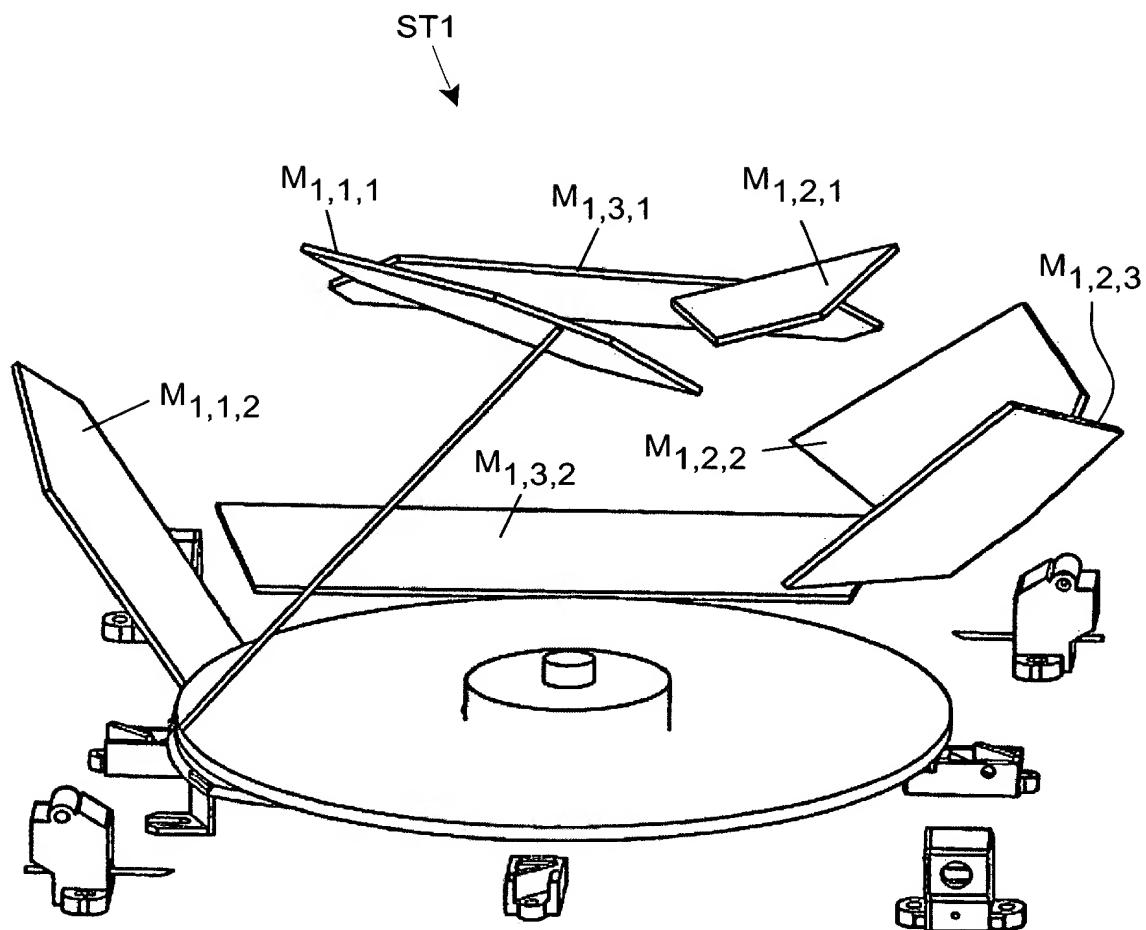
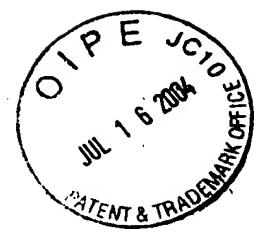
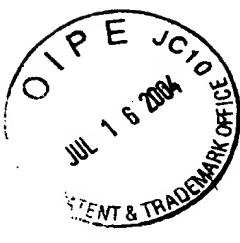


FIG. 6B1



	N	O	P	Q	R	S	T	U	V	W	X
25	Facet	8									
26	X	y	z								
27	-0.616	0.000	0.788								
28		End		Middle							End
29	x	y	z	x	y	z	x	y	z		
30	0.468	-0.249	0.848	0.468	-0.249	0.848	0.430	-0.387	0.816		
31	0.408	-0.675	-0.614	0.408	-0.675	-0.614	0.375	-0.774	-0.510		
32	-0.999	0.012	-0.034	-0.999	0.012	-0.034	-0.993	-0.106	0.054		
33	-0.616	0.531	0.582	-0.616	0.531	0.582	-0.605	0.419	0.677		
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											

FIG. 6B2



	A	B	C	D	E	F	G	H	I	J	K	L
25	High Elevation Right Skew	Facet	10									
26	(G1)	x	y	z								
27	Vector from Module	-0.616	0.000	0.788								
28			End		Middle					End		
29		x	y	z	x	y	z		x	y	z	
30	Output Vectors From Disk	0.441	-0.235	0.866	0.441	-0.235	0.866		0.398	-0.391	0.830	
31	First Mirror Reflected Directions	0.380	-0.673	-0.635	0.380	-0.673	-0.635		0.343	-0.784	-0.517	
32	Second Mirror Reflected Directions	-0.998	0.000	-0.067	-0.998	0.000	-0.067		-0.991	-0.133	0.033	
33	Third Mirror Reflected Directions	-0.589	0.553	0.589	-0.589	0.553	0.589		-0.578	0.426	0.697	
34												
35		Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
36		x	y	z	x	y	z	x	y	z		
37	1	2.550	-1.630	2.650	4.000	-2.630	0.049	3.746	-3.750	1.000		
38	2	4.150	-2.267	2.770	4.900	-1.400	0.775	1.371	-3.300	2.100		
39	3	3.950	0.196	2.060	4.600	-3.150	2.118	1.159	-1.600	0.800		
40	4	2.420	-0.309	2.270	3.800	-3.900	1.067	2.824	-2.000	0.100		
41	5							3.771	-2.700	0.100		
42	6											
43	7											
44	8											
45												

FIG. 6B3



FIG. 6B4

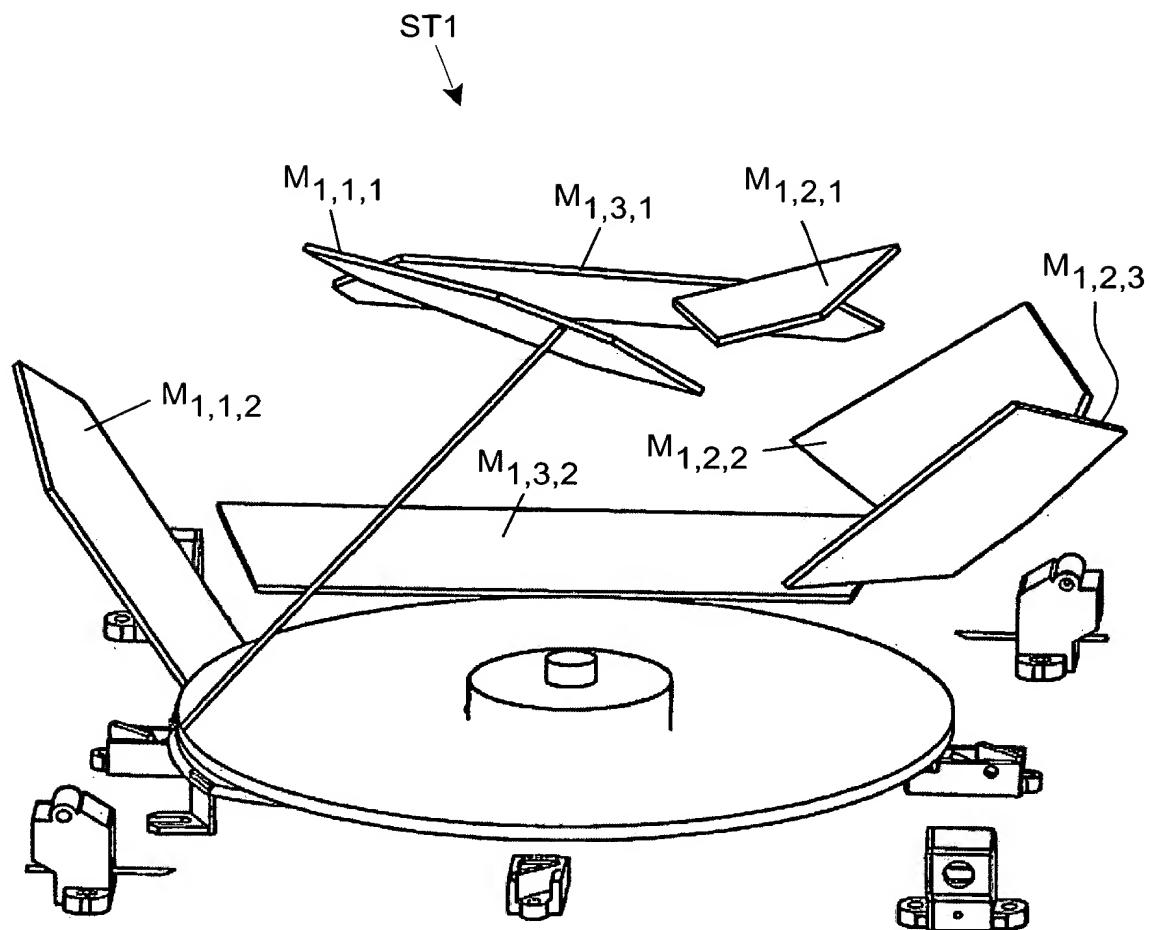


FIG. 6C1



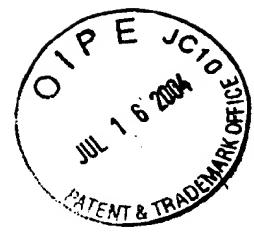
	N	O	P	Q	R	S	T	U	V	W	X
46	Facet	1									
47	x	y	z								
48	-0.616	0.000	0.788								
49				End		Middle				End	
50	x	y	z		x	y	z		x	y	z
51	0.753	0.321	0.575		0.788	0.000	0.616		0.753	-0.321	0.575
52	-0.366	0.443	-0.819		-0.425	0.132	-0.896		-0.421	-0.193	-0.887
53	-0.574	0.468	0.672		-0.653	0.160	0.740		-0.648	-0.165	0.743
54											
55											
56				Mirror 1 Corners		Mirror 2 Corners			Mirror 3 Corners		
57	x	y	z		x	y	z		x	y	z
58	4.250	1.500	2.547		3.150	2.450	0.030				
59	4.950	2.000	2.029		4.500	2.800	0.213				
60	5.150	1.800	1.851		4.350	-2.200	0.277				
61	5.000	-1.800	1.656		3.050	-1.850	0.089				
62	4.750	-1.950	1.844								
63	4.100	-1.500	2.405								
64											
65											

FIG. 6C2



	A	B	C	D	E	F	G	H	I	J	K	L
46	Low Elevation	Facet	2									
47	(G3)	x	y	z								
48	Vector from Module	-0.616	0.000	0.788								
49		End					Middle			End		
50		x	y	z	x	y	z	x	y	z		
51	Output Vectors From Disk	0.734	0.305	0.607	0.766	0.000	0.643	0.731	-0.319	0.604		
52	First Mirror Reflected Directions	-0.402	0.429	-0.809	-0.456	0.133	-0.880	-0.453	-0.190	-0.871		
53	Second Mirror Reflected Directions	-0.607	0.454	0.653	-0.679	0.161	0.716	-0.675	-0.162	0.719		
54	Third Mirror Reflected Directions											
55												
56		Mirror 1 Corners			Mirror 2 Corners		Mirror 3 Corners					
57		x	y	z	x	y	z	x	y	z		
58	1	4.250	1.500	2.547	3.150	2.450	0.030					
59	2	4.950	2.000	2.029	4.500	2.800	0.213					
60	3	5.150	1.800	1.851	4.350	-2.200	0.277					
61	4	5.000	-1.800	1.656	3.050	-1.850	0.089					
62	5	4.750	-1.950	1.844								
63	6	4.100	-1.500	2.405								
64	7											
65	8											

FIG. 6C3



	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
46	Facet	3									
47	x	y	z								
48	-0.616	0.000	0.788								
49		End				Middle					End
50	x	y	z	x	y	z	x	y	z		
51	0.714	0.290	0.638	0.743	0.000	0.669	0.709	-0.311	0.633		
52	-0.438	0.416	-0.797	-0.487	0.134	-0.863	-0.485	-0.181	-0.855		
53	-0.638	0.440	0.632	-0.704	0.161	0.692	-0.702	-0.155	0.695		
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	4.250	1.500	2.547	3.150	2.450	0.030					
59	4.950	2.000	2.029	4.500	2.800	0.213					
60	5.150	1.800	1.851	4.350	-2.200	0.277					
61	5.000	-1.800	1.656	3.050	-1.850	0.089					
62	4.750	-1.950	1.844								
63	4.100	-1.500	2.405								
64											
65											

FIG. 6C4



FIG. 6C5

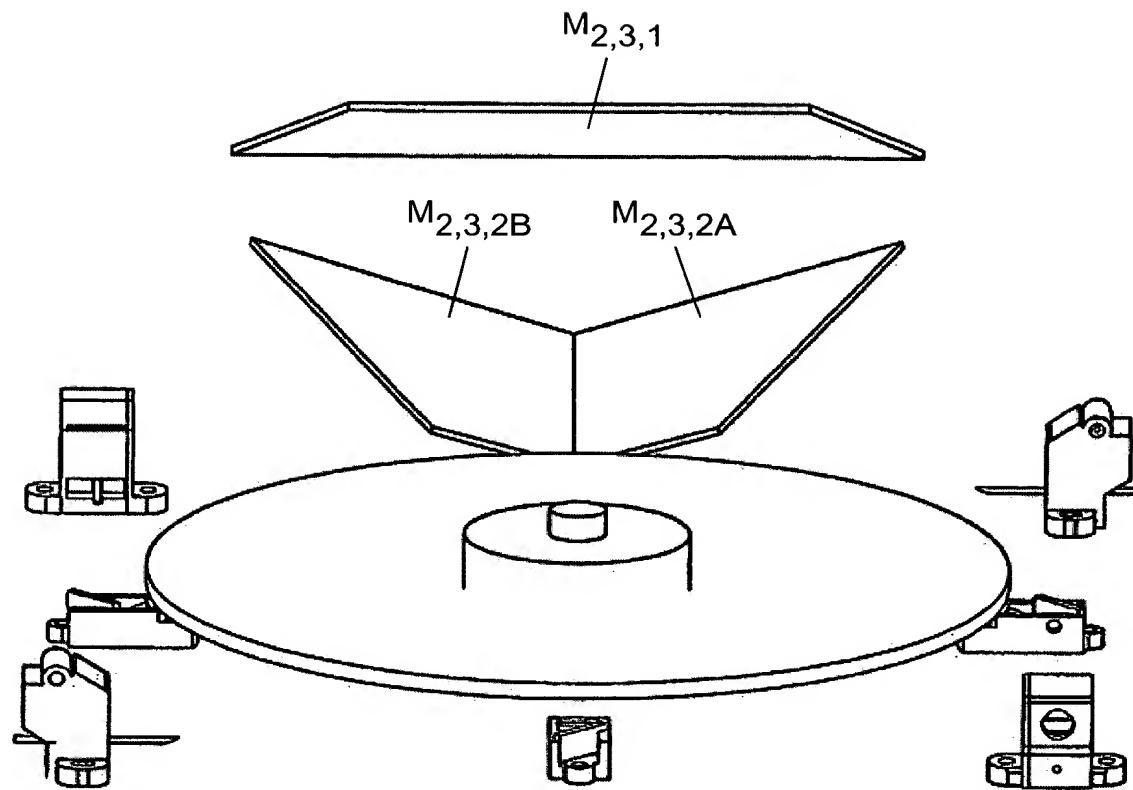
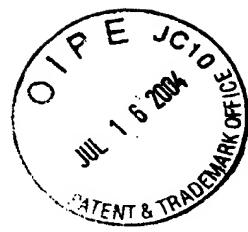
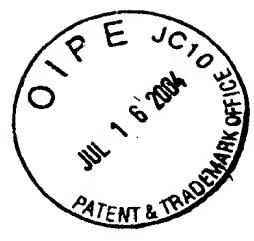


FIG. 6D1



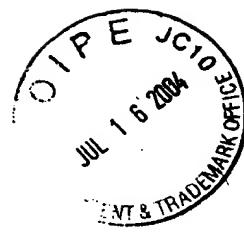
	N	O	P	Q	R	S	T	U	V	W	X
46	Facet	1									
47	x	y	z								
48	-0.616	0.000	0.788								
49	End			Middle			End				
50	x	y	z	x	y	z	x	y	z		
51	0.788	0.000	0.616	0.788	0.000	0.616	0.741	-0.367	0.562		
52	-0.140	0.000	-0.990	-0.140	0.000	-0.990	-0.117	-0.367	-0.923		
53	-0.595	0.448	0.667	-0.595	0.448	0.667	-0.590	0.098	0.801		
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	3.750	-1.600	2.509	3.000	0.000	-0.112					
59	5.100	-2.400	1.728	4.800	0.000	0.382					
60	5.100	2.400	1.728	5.071	-2.256	1.066					
61	3.750	1.600	2.509	5.071	-2.256	1.066					
62				3.060	-1.000	0.175					
63											
64											
65											
66											
67											
68											
69											
70											
71				3.000	0.000	-0.112					
72				4.800	0.000	0.382					
73				5.071	2.256	1.066					
74				5.071	2.256	1.066					
75				3.060	1.000	0.175					
76											

FIG. 6D2



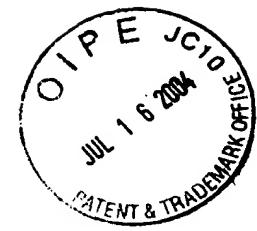
	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	
46	Facet	2										
47	x	y	z									
48	-0.616	0.000	0.788									
49	End		Middle		End		Middle		End		Middle	
50	x	y	z	x	y	z	x	y	z	x	y	z
51	0.766	0.000	0.643	0.766	0.000	0.643	0.711	-0.395	0.581			
52	-0.175	0.000	-0.985	-0.175	0.000	-0.985	-0.149	-0.395	-0.907			
53	-0.623	0.440	0.647	-0.623	0.440	0.647	-0.614	0.062	0.787			
54												
55												
56	Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners		Mirror 4 Corners		Mirror 5 Corners		Mirror 6 Corners	
57	x	y	z	x	y	z	x	y	z	x	y	z
58	3.750	-1.600	2.509	3.000	0.000	-0.112						
59	5.100	-2.400	1.728	4.800	0.000	0.382						
60	5.100	2.400	1.728	5.071	-2.256	1.066						
61	3.750	1.600	2.509	5.071	-2.256	1.066						
62				3.060	-1.000	0.175						
63												
64												
65												
66												
67												
68												
69												
70												
71				3.000	0.000	-0.112						
72				4.800	0.000	0.382						
73				5.071	2.256	1.066						
74				5.071	2.256	1.066						
75				3.060	1.000	0.175						
76												

FIG. 6D3



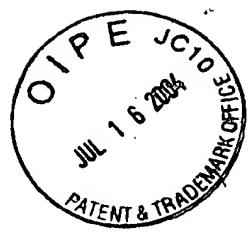
	A	B	C	D	E	F	G	H	I	J	K	L
46	Low Elevation											
47		Facet	3									
48	Vector from Module	x	y	z								
49		-0.616	0.000	0.788								
50					End							
51	Output Vectors From Disk	x	y	z		x	y	z		x	y	z
52	First Mirror Reflected Directions	0.743	0.000	0.669	0.743	0.000	0.669	0.697	-0.362	0.619		
53	Second Mirror Reflected Directions	-0.209	0.000	-0.978	-0.209	0.000	-0.978	-0.189	-0.362	-0.913		
54	Third Mirror Reflected Directions	-0.649	0.433	0.625	-0.649	0.433	0.625	-0.648	0.089	0.757		
55												
56					Mirror 1 Corners				Mirror 2 Corners			Mirror 3 Corners
57					x	y	z	x	y	z	x	y
58		1	3.750	-1.600	2.509		3.000	0.000	-0.112			
59		2	5.100	-2.400	1.728		4.800	0.000	0.382			
60		3	5.100	2.400	1.728		5.071	-2.256	1.066			
61		4	3.750	1.600	2.509		5.071	-2.256	1.066			
62		5					3.060	-1.000	0.175			
63		6										
64		7										
65		8										
66												
67												
68												
69	Note: Special Case!											
70												
71	Second Part of Mirror 2											
72												
73												
74												
75												
76												
77												

FIG. 6D4



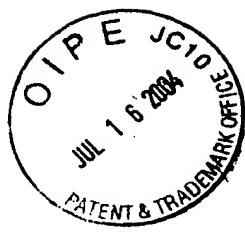
	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
46	Facet	4									
47	x	y	z								
48	-0.616	0.000	0.788								
49	End			Middle				End			
50	x	y	z	x	y	z	x	y	z		
51	0.719	0.000	0.695	0.719	0.000	0.695	0.664	-0.395	0.635		
52	-0.243	0.000	-0.970	-0.243	0.000	-0.970	-0.220	-0.395	-0.892		
53	-0.675	0.425	0.603	-0.675	0.425	0.603	-0.668	0.046	0.742		
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	3.750	-1.600	2.509	3.000	0.000	-0.112					
59	5.100	-2.400	1.728	4.800	0.000	0.382					
60	5.100	2.400	1.728	5.071	-2.256	1.066					
61	3.750	1.600	2.509	5.071	-2.256	1.066					
62				3.060	-1.000	0.175					
63											
64											
65											
66											
67											
68											
69											
70											
71				3.000	0.000	-0.112					
72				4.800	0.000	0.382					
73				5.071	2.256	1.066					
74				5.071	2.256	1.066					
75				3.060	1.000	0.175					
76											

FIG. 6D5



	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
46	Facet	5									
47	x	y	z								
48	-0.616	0.000	0.788								
49		End		Middle			End				
50	x	y	z	x	y	z	x	y	z		
51	0.669	0.000	0.743	0.669	0.000	0.743	0.634	-0.311	0.708		
52	-0.310	0.000	-0.951	-0.310	0.000	-0.951	-0.298	-0.311	-0.903		
53	-0.724	0.407	0.557	-0.724	0.407	0.557	-0.730	0.114	0.673		
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	3.750	-1.600	2.509	3.000	0.000	-0.112					
59	5.100	-2.400	1.728	4.800	0.000	0.382					
60	5.100	2.400	1.728	5.071	-2.256	1.066					
61	3.750	1.600	2.509	5.071	-2.256	1.066					
62				3.060	-1.000	0.175					
63											
64											
65											
66											
67											
68											
69											
70											
71				3.000	0.000	-0.112					
72				4.800	0.000	0.382					
73				5.071	2.256	1.066					
74				5.071	2.256	1.066					
75				3.060	1.000	0.175					
76											

FIG. 6D6



	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX
46	Facet	6													
47	x	y	z												
48	-0.616	0.000	0.788												
49	End			Middle				End							
50	x	y	z	x	y	z	x	y	z						
51	0.616	0.000	0.788	0.616	0.000	0.788	0.596	-0.232	0.769						
52	-0.376	0.000	-0.927	-0.376	0.000	-0.927	-0.369	-0.232	-0.900						
53	-0.770	0.387	0.508	-0.770	0.387	0.508	-0.781	0.173	0.600						
54															
55															
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners								
57	x	y	z	x	y	z	x	y	z						
58	3.750	-1.600	2.509	3.000	0.000	-0.112									
59	5.100	-2.400	1.728	4.800	0.000	0.382									
60	5.100	2.400	1.728	5.071	-2.256	1.066									
61	3.750	1.600	2.509	5.071	-2.256	1.066									
62				3.060	-1.000	0.175									
63															
64															
65															
66															
67															
68															
69															
70															
71															
72															
73															
74															
75															

FIG. 6D7

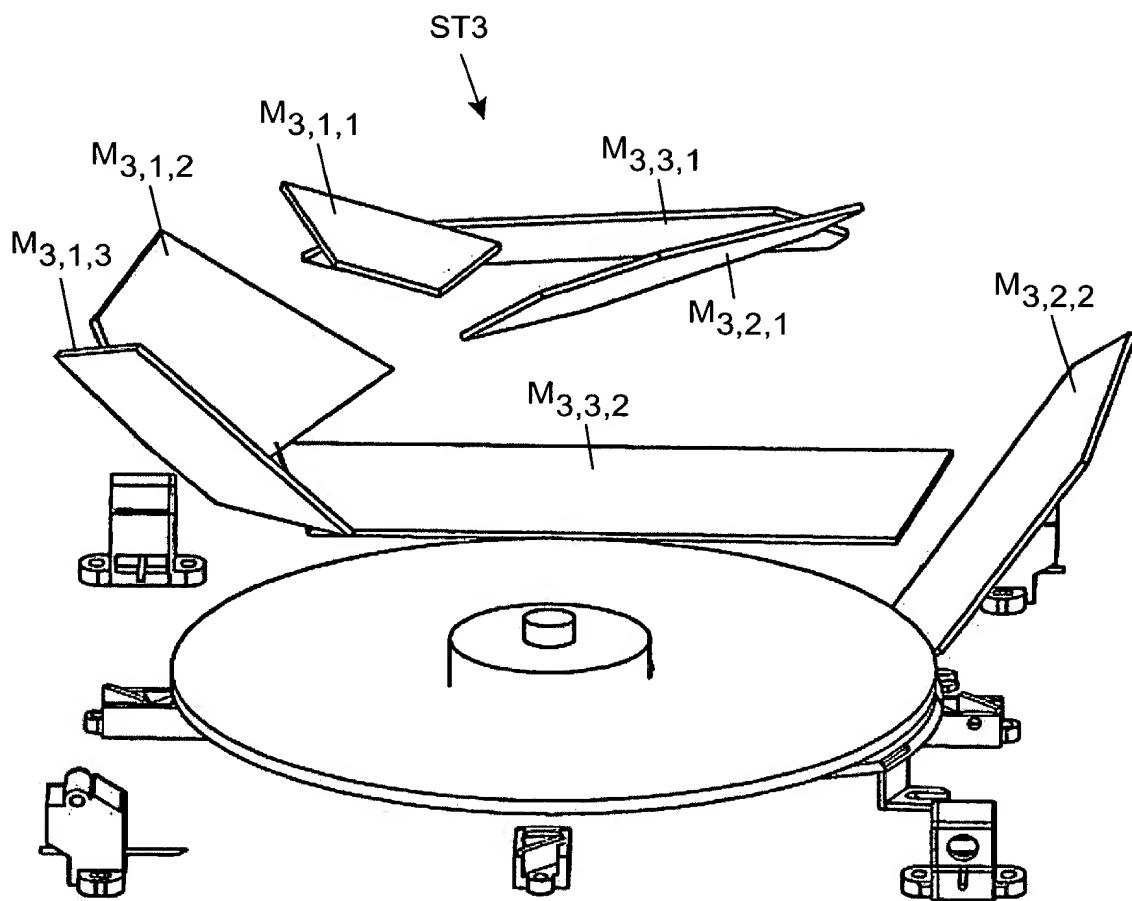
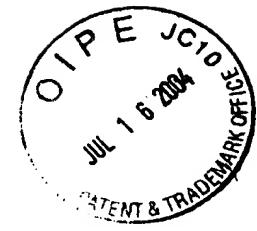
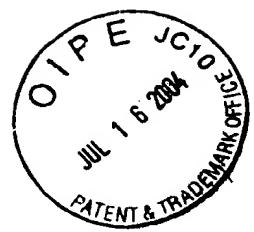


FIG. 6E1



	N	O	P	Q	R	S	T	U	V	W	X
1											
2											
3											
4	Facet	7									
5	x	y	z								
6	-0.616	0.000	0.788								
7	End			Middle			End				
8	x	y	z	x	y	z	x	y	z		
9	0.468	0.249	0.848	0.468	0.249	0.848	0.430	0.387	0.816		
10	0.408	0.675	-0.614	0.408	0.675	-0.614	0.375	0.774	-0.510		
11	-0.999	-0.012	-0.034	-0.999	-0.012	-0.034	-0.993	0.106	0.054		
12	-0.616	-0.531	0.582	-0.616	-0.531	0.582	-0.605	-0.419	0.677		
13											
14	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
15	x	y	z	x	y	z	x	y	z		
16	2.550	1.630	2.650	4.000	2.630	0.049	3.746	3.750	1.000		
17	4.150	2.267	2.770	4.900	1.400	0.775	1.371	3.300	2.100		
18	3.950	-0.196	2.060	4.600	3.150	2.118	1.159	1.600	0.800		
19	2.420	0.309	2.270	3.800	3.900	1.067	2.824	2.000	0.100		
20							3.771	2.700	0.100		
21											
22											
23											
24											

FIG. 6E2



	A	B	C	D	E	F	G	H	I	J	K	L
1	Station 3											
2												
3												
4	High Elevation Left Skew	Facet	9									
5	(G2)	x	y	z								
6	Vector from Module	-0.616	0.000	0.788								
7					End		Middle		End			
8		x	y	z		x	y	z		x	y	z
9	Output Vectors From Disk	0.441	0.235	0.866		0.441	0.235	0.866		0.398	0.391	0.830
10	First Mirror Reflected Directions	0.380	0.673	-0.635		0.380	0.673	-0.635		0.343	0.784	-0.517
11	Second Mirror Reflected Directions	-0.998	0.000	-0.067		-0.998	0.000	-0.067		-0.991	0.133	0.033
12	Third Mirror Reflected Directions	-0.589	-0.553	0.589		-0.589	-0.553	0.589		-0.578	-0.426	0.697
13												
14					Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners			
15		x	y	z		x	y	z		x	y	z
16	1	2.550	1.630	2.650		4.000	2.630	0.049		3.746	3.750	1.000
17	2	4.150	2.267	2.770		4.900	1.400	0.775		1.371	3.300	2.100
18	3	3.950	-0.196	2.060		4.600	3.150	2.118		1.159	1.600	0.800
19	4	2.420	0.309	2.270		3.800	3.900	1.067		2.824	2.000	0.100
20	5									3.771	2.700	0.100
21	6											
22	7											
23	8											

FIG. 6E3



	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1											
2											
3											
4	Facet	11									
5	x	y	z								
6	-0.616	0.000	0.788								
7	End			Middle			End				
8	x	y	z	x	y	z	x	y	z		
9	0.415	0.220	0.883	0.415	0.220	0.883	0.369	0.387	0.845		
10	0.351	0.669	-0.655	0.351	0.669	-0.655	0.312	0.788	-0.530		
11	-0.995	0.012	-0.099	-0.995	0.012	-0.099	-0.988	0.153	0.007		
12	-0.562	-0.574	0.596	-0.562	-0.574	0.596	-0.550	-0.439	0.710		
13											
14	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
15	x	y	z	x	y	z	x	y	z		
16	2.550	1.630	2.650	4.000	2.630	0.049	3.746	3.750	1.000		
17	4.150	2.267	2.770	4.900	1.400	0.775	1.371	3.300	2.100		
18	3.950	-0.196	2.060	4.600	3.150	2.118	1.159	1.600	0.800		
19	2.420	0.309	2.270	3.800	3.900	1.067	2.824	2.000	0.100		
20							3.771	2.700	0.100		
21											
22											
23											
24											

FIG. 6E4

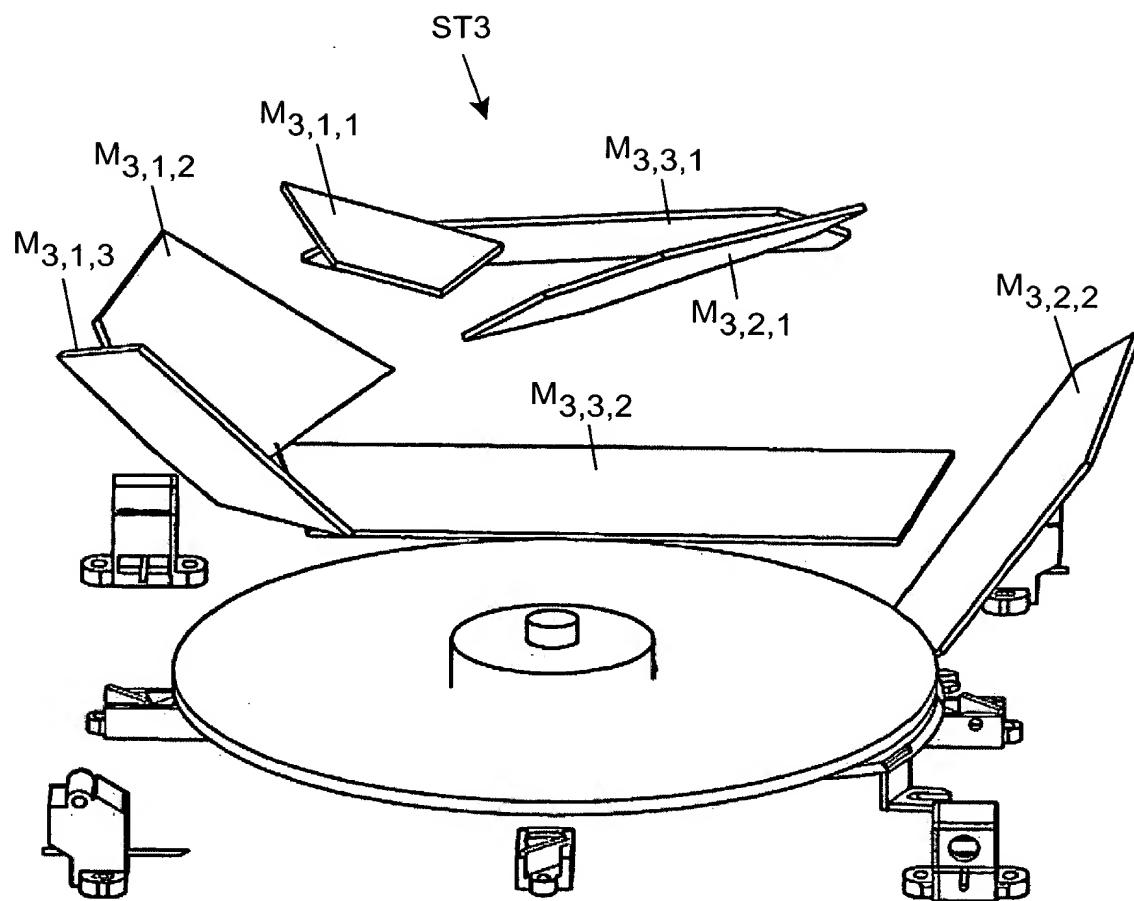
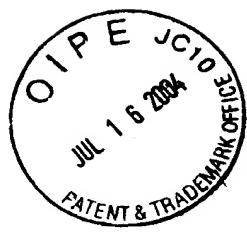
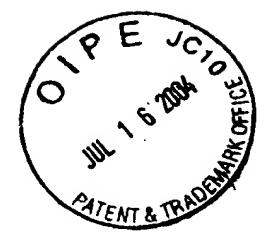


FIG. 6F1



	N	O	P	Q	R	S	T	U	V	W	X
25	Facet	8									
26	x	y	z								
27	-0.6116	0.0000	0.7888								
28				End		Middle					End
29	x	y	z		x	y	z	x	y	z	
30	0.419	-0.416	0.807		0.468	-0.249	0.848	0.494	-0.048	0.868	
31	-0.253	-0.917	-0.310		-0.316	-0.832	-0.455	-0.387	-0.704	-0.596	
32	-0.469	0.414	0.781		-0.537	0.527	0.659	-0.603	0.626	0.494	
33											
34											
35				Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners			
36	x	y	z		x	y	z	x	y	z	
37	3.900	-2.436	2.770		1.700	-4.102	1.300				
38	4.100	-1.879	2.400		3.300	-4.400	1.980				
39	3.800	-0.137	1.800		3.400	-3.990	1.500				
40	3.150	0.737	1.800		2.300	-2.427	-0.625				
41	2.500	0.159	2.450		1.700	-2.524	-0.625				
42	2.650	-0.757	2.770		1.050	-3.101	-0.050				
43											
44											

FIG. 6F2



	A	B	C	D	E	F	G	H	I	J	K	L
25	High Elevation Right Skew	Facet	10									
26	(G1)	x	y	z								
27	Vector from Module	-0.616	0.000	0.788								
28				End			Middle					End
29		x	y	z	x	y	z	x	y	y	z	
30	Output Vectors From Disk	0.378	-0.445	0.812	0.441	-0.235	0.866	0.464	-0.068	0.883		
31	First Mirror Reflected Directions	-0.269	-0.927	-0.263	-0.349	-0.823	-0.448	-0.408	-0.717	-0.565		
32	Second Mirror Reflected Directions	-0.479	0.367	0.797	-0.566	0.512	0.647	-0.621	0.595	0.510		
33	Third Mirror Reflected Directions											
34												
35												
36		x	y	z	x	y	z	x	y	y	z	
37	1	3.900	-2.436	2.770	1.700	4.102	1.300					
38	2	4.100	-1.879	2.400	3.300	-4.400	1.980					
39	3	3.800	-0.137	1.800	3.400	-3.990	1.500					
40	4	3.150	0.737	1.800	2.300	-2.427	-0.625					
41	5	2.500	0.159	2.450	1.700	-2.524	-0.625					
42	6	2.650	-0.757	2.770	1.050	-3.101	-0.050					
43	7											
44	8											

FIG. 6F3



	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
25	Facet	12									
26	x	y	z								
27	-0.616	0.000	0.788								
28		End		Middle					End		
29	x	y	z	x	y	z	x	y	z		
30	0.3333	-0.476	0.814	0.415	-0.220	0.883	0.433	-0.086	0.897		
31	-0.284	-0.935	-0.211	-0.382	-0.813	-0.440	-0.429	-0.728	-0.535		
32	-0.487	0.316	0.814	-0.594	0.496	0.633	-0.638	0.564	0.524		
33											
34											
35	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
36	x	y	z	x	y	z	x	y	z		
37	3.900	-2.436	2.770	1.700	-4.102	1.300					
38	4.100	-1.879	2.400	3.300	-4.400	1.980					
39	3.800	-0.137	1.800	3.400	-3.990	1.500					
40	3.150	0.737	1.800	2.300	-2.427	-0.625					
41	2.500	0.159	2.450	1.700	-2.524	-0.625					
42	2.650	-0.757	2.770	1.050	-3.101	-0.050					
43											
44											
45											

FIG. 6F4

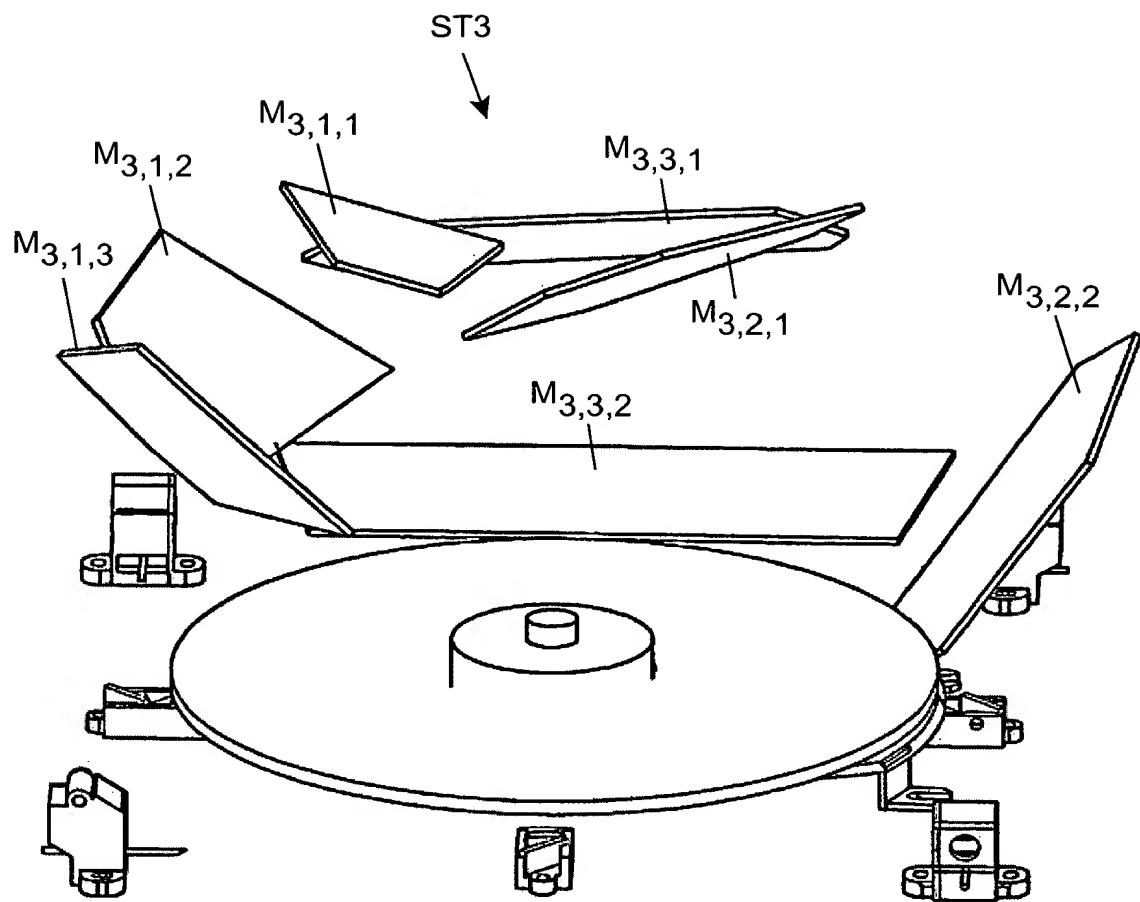
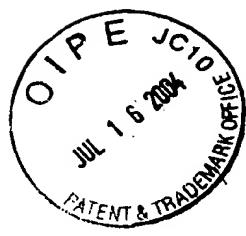
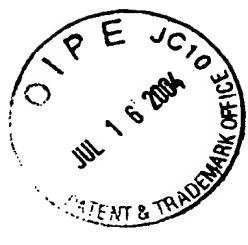


FIG. 6G1



	N	O	P	Q	R	S	T	U	V	W	X
46	Facet	1									
47	x	y	z								
48	-0.616	0.000	0.788								
49		End		Middle							End
50	x	y	z	x	y	z	x	y	z		
51	0.753	-0.321	0.575	0.788	0.000	0.616	0.753	0.321	0.575		
52	-0.366	-0.443	-0.819	-0.425	-0.132	-0.896	-0.421	0.193	-0.887		
53	-0.574	-0.468	0.672	-0.653	-0.160	0.740	-0.648	0.165	0.743		
54											
55											
56		Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners					
57	x	y	z	x	y	z	x	y	z		
58	4.250	-1.500	2.547	3.150	-2.450	0.030					
59	4.950	-2.000	2.029	4.500	-2.800	0.213					
60	5.150	-1.800	1.851	4.350	2.200	0.277					
61	5.000	1.800	1.656	3.050	1.850	0.089					
62	4.750	1.950	1.844								
63	4.100	1.500	2.405								
64											
65											

FIG. 6G2



	A	B	C	D	E	F	G	H	I	J	K	L
46	Low Elevation	Facet	2									
47	(G3)	x	y	z								
48	Vector from Module	-0.616	0.000	0.788								
49		End				Middle						End
50		x	y	z	x	y	z	x	y	z		
51	Output Vectors From Disk	0.734	-0.305	0.607	0.766	0.000	0.643	0.731	0.319	0.604		
52	First Mirror Reflected Directions	-0.402	-0.429	-0.809	-0.456	-0.133	-0.880	-0.453	0.190	-0.871		
53	Second Mirror Reflected Directions	-0.607	-0.454	0.653	-0.679	-0.161	0.716	-0.675	0.162	0.719		
54	Third Mirror Reflected Directions											
55												
56					Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners			
57		x	y	z	x	y	z	x	y	z		
58		1	4.250	-1.500	2.547	3.150	-2.450	0.030				
59		2	4.950	-2.000	2.029	4.500	-2.800	0.213				
60		3	5.150	-1.800	1.851	4.350	2.200	0.277				
61		4	5.000	1.800	1.656	3.050	1.850	0.089				
62		5	4.750	1.950	1.844							
63		6	4.100	1.500	2.405							
64		7										
65		8										
66												

FIG. 6G3



	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
46	Facet	3									
47	x	y	z								
48	-0.616	0.000	0.788								
49	End	Middle	End								
50	x	y	z	x	y	z	x	y	z	x	y
51	0.714	-0.290	0.638	0.743	0.000	0.669	0.709	0.311	0.633	0.714	-0.290
52	-0.438	-0.416	-0.797	-0.487	-0.134	-0.863	-0.485	0.181	-0.855	-0.438	-0.416
53	-0.638	-0.440	0.632	-0.704	-0.161	0.692	-0.702	0.155	0.695	-0.638	-0.440
54											
55											
56	Mirror 1 Corners	Mirror 2 Corners	Mirror 3 Corners	Mirror 1 Corners	Mirror 2 Corners	Mirror 3 Corners	Mirror 1 Corners	Mirror 2 Corners	Mirror 3 Corners	Mirror 1 Corners	Mirror 2 Corners
57	x	y	z	x	y	z	x	y	z	x	y
58	4.250	-1.500	2.547	3.150	-2.450	0.030	4.250	-1.500	2.547	3.150	-2.450
59	4.950	-2.000	2.029	4.500	-2.800	0.213	4.950	-2.000	2.029	4.500	-2.800
60	5.150	-1.800	1.851	4.350	2.200	0.277	5.150	-1.800	1.851	4.350	2.200
61	5.000	1.800	1.656	3.050	1.850	0.089	5.000	1.800	1.656	3.050	1.850
62	4.750	1.950	1.844				4.750	1.950	1.844		
63	4.100	1.500	2.405				4.100	1.500	2.405		
64											
65											

FIG. 6G4



	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
46	Facet	4									
47	x	y	z								
48	-0.6116	0.0000	0.7888								
49		End		Middle			End				
50	x	y	z	x	y	z	x	y	z		
51	0.692	-0.275	0.667	0.719	0.000	0.695	0.686	0.307	0.660		
52	-0.472	-0.402	-0.784	-0.517	-0.135	-0.846	-0.516	0.176	-0.838		
53	-0.667	-0.426	0.611	-0.728	-0.161	0.666	-0.727	0.151	0.670		
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	4.250	-1.500	2.547	3.150	-2.450	0.030					
59	4.950	-2.000	2.029	4.500	-2.800	0.213					
60	5.150	-1.800	1.851	4.350	2.200	0.277					
61	5.000	1.800	1.656	3.050	1.850	0.089					
62	4.750	1.950	1.844								
63	4.100	1.500	2.405								
64											
65											

FIG. 6G5

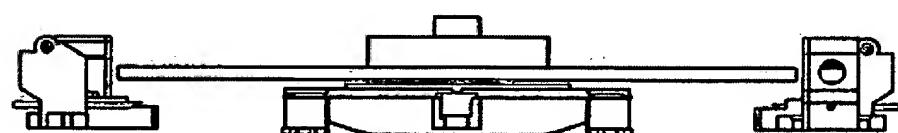
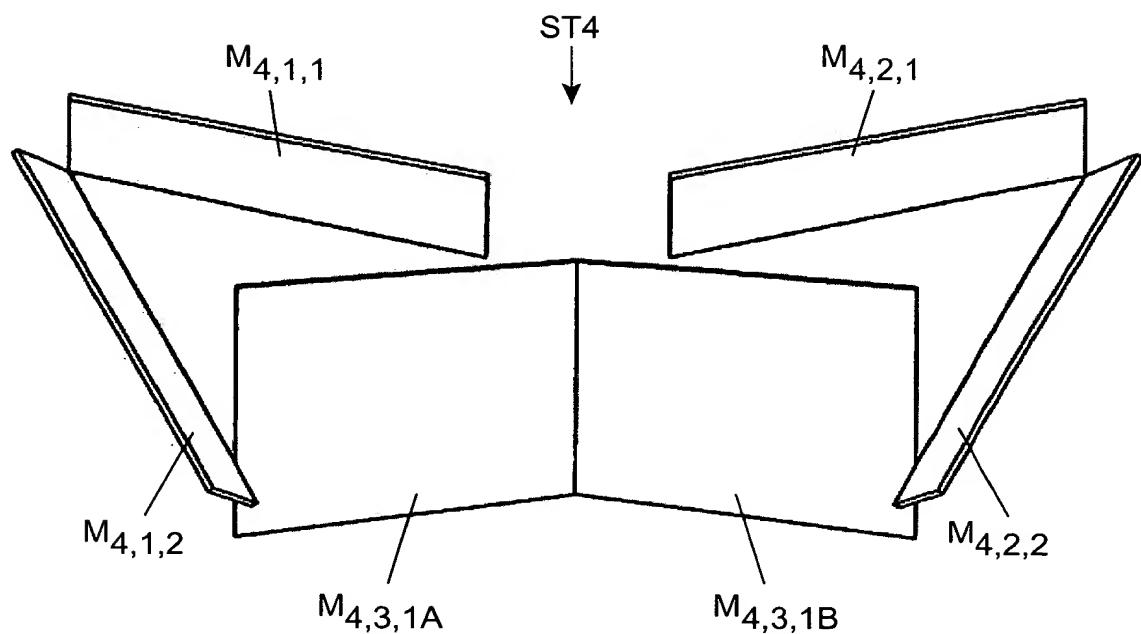
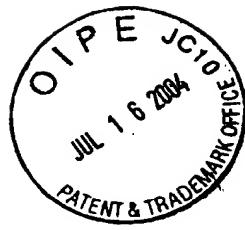


FIG. 6H1



	N	O	P	Q	R	S	T	U	V	W	X
1											
2											
3											
4	Facet	7									
5	x	y	z								
6	-0.616	0.000	0.788								
7		End		Middle			End				
8	x	y	z	x	y	z	x	y	z		
9	0.399	0.468	0.789	0.468	0.249	0.848	0.481	0.180	0.858		
10	-0.433	0.736	-0.519	-0.495	0.559	-0.665	-0.511	0.500	-0.700		
11	-0.737	-0.585	0.339	-0.768	-0.631	0.108	-0.771	-0.636	0.038		
12											
13											
14	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
15	x	y	z	x	y	z	x	y	z		
16	4.900	0.800	6.409	2.850	3.200	3.370					
17	6.100	0.800	5.645	4.200	2.800	3.231					
18	6.000	4.500	6.468	5.950	4.500	6.464					
19	4.900	4.500	7.168	4.600	4.950	6.680					
20											
21											
22											
23											

FIG. 6H2



	A	B	C	D	E	F	G	H	I	J	K	L
1	Station 4											
2												
3												
4	High Elevation Left Skew											
5		X	Y	Z								
6	Vector from Module	-0.616	0.000	0.788								
7												
8		X	Y	Z	X	Y	Z	X	Y	Z		
9	Output Vectors From Disk	0.366	0.474	0.801	0.441	0.235	0.866	0.452	0.177	0.874		
10	First Mirror Reflected Directions	-0.458	0.739	-0.494	-0.525	0.546	-0.653	-0.538	0.496	-0.681		
11	Second Mirror Reflected Directions	-0.755	-0.556	0.348	-0.789	-0.606	0.096	-0.792	-0.610	0.037		
12	Third Mirror Reflected Directions											
13												
14												
15		X	Y	Z	X	Y	Z	X	Y	Z		
16	1	4.900	0.800	6.409	2.850	3.200	3.370					
17	2	6.100	0.800	5.645	4.200	2.800	3.231					
18	3	6.000	4.500	6.468	5.950	4.500	6.464					
19	4	4.900	4.500	7.168	4.600	4.950	6.680					
20	5											
21	6											
22	7											

FIG. 6H3

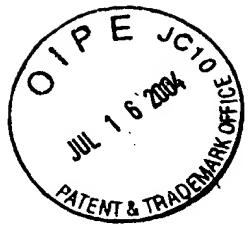


FIG. 6H4

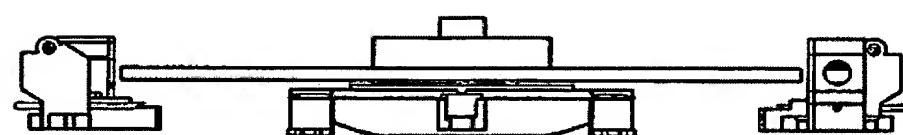
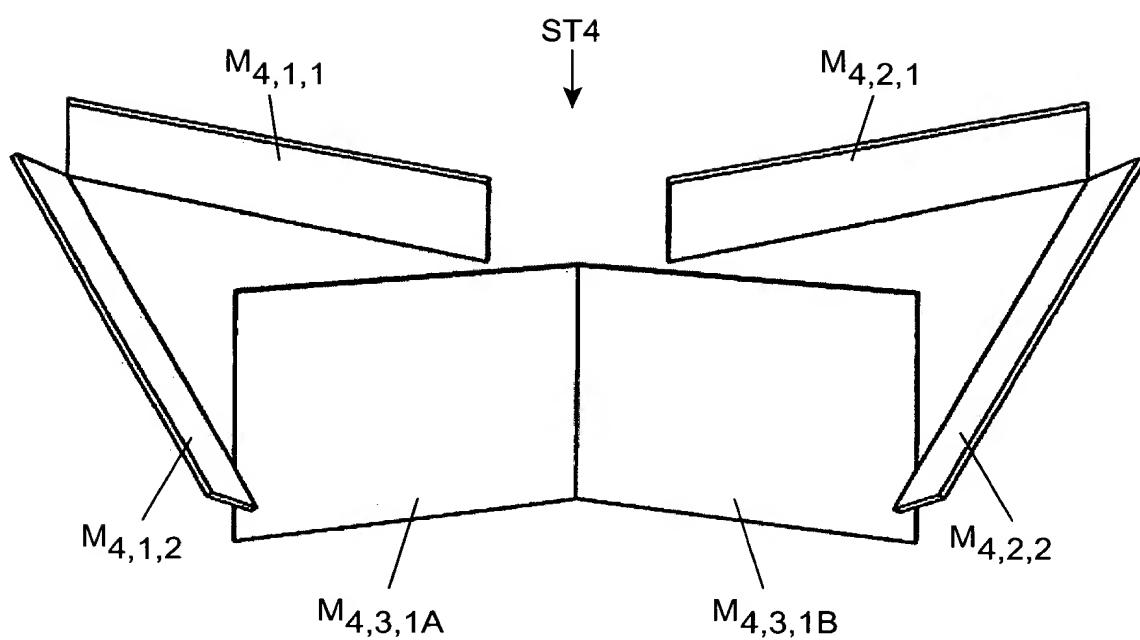
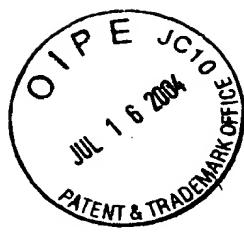


FIG. 6I1



	N	O	P	Q	R	S	T	U	V	W	X
25	Facet	8									
26	x	y	z								
27	-0.616	0.000	0.788								
28				End		Middle				End	
29	x	y	z		x	y	z		x	y	z
30	0.481	-0.180	0.858		0.468	-0.249	0.848		0.399	-0.468	0.789
31	-0.511	-0.500	-0.700		-0.495	-0.559	-0.665		-0.433	-0.736	-0.519
32	-0.771	0.636	0.038		-0.768	0.631	0.108		-0.737	0.585	0.339
33											
34											
35				Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners			
36	x	y	z		x	y	z		x	y	z
37	4.900	-0.800	6.409		2.850	-3.200	3.370				
38	6.100	-0.800	5.645		4.200	-2.800	3.231				
39	6.000	-4.500	6.468		5.950	-4.500	6.464				
40	4.900	-4.500	7.168		4.600	-4.950	6.680				
41											
42											
43											

FIG. 6|2



	A	B	C	D	E	F	G	H	I	J	K	L
25	High Elevation Right Skew	Facet	10									
26		x	y	z								
27	Vector from Module	-0.616	0.000	0.788								
28		End			Middle							End
29		x	y	z	x	y	z	x	y	z		
30	Output Vectors From Disk	0.452	-0.177	0.874	0.441	-0.235	0.866	0.366	-0.474	0.801		
31	First Mirror Reflected Directions	-0.538	-0.496	-0.681	-0.525	-0.546	-0.653	-0.458	-0.739	-0.494		
32	Second Mirror Reflected Directions	-0.792	0.610	0.037	-0.789	0.606	0.096	-0.755	0.556	0.348		
33	Third Mirror Reflected Directions											
34												
35				Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners				
36		x	y	z	x	y	z	x	y	z		
37	1	4.900	-0.800	6.409	2.850	-3.200	3.370					
38	2	6.100	-0.800	5.645	4.200	-2.800	3.231					
39	3	6.000	-4.500	6.468	5.950	-4.500	6.464					
40	4	4.900	-4.500	7.168	4.600	-4.950	6.680					
41	5											
42	6											
43	7											
44	8											

FIG. 6I3



	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
25	Facet	12									
26	x	y	z								
27	-0.616	0.000	0.788								
28				End		Middle			End		
29	x	y	z		x	y	z		x	y	z
30	0.422	-0.176	0.889		0.415	-0.220	0.883		0.332	-0.478	0.813
31	-0.564	-0.494	-0.661		-0.554	-0.533	-0.640		-0.482	-0.741	-0.467
32	-0.811	0.583	0.039		-0.810	0.581	0.084		-0.773	0.526	0.356
33											
34											
35	Mirror 1 Corners			Mirror 2 Corners				Mirror 3 Corners			
36	x	y	z	x	y	z	x	y	z		
37	4.900	-0.800	6.409		2.850	-3.200	3.370				
38	6.100	-0.800	5.645		4.200	-2.800	3.231				
39	6.000	-4.500	6.468		5.950	-4.500	6.464				
40	4.900	-4.500	7.168		4.600	-4.950	6.680				
41											
42											
43											
44											

FIG. 614

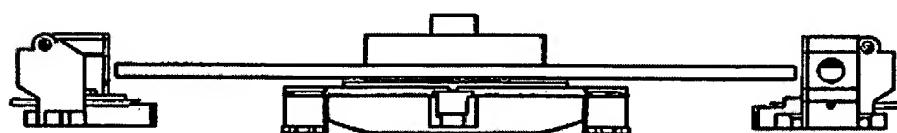
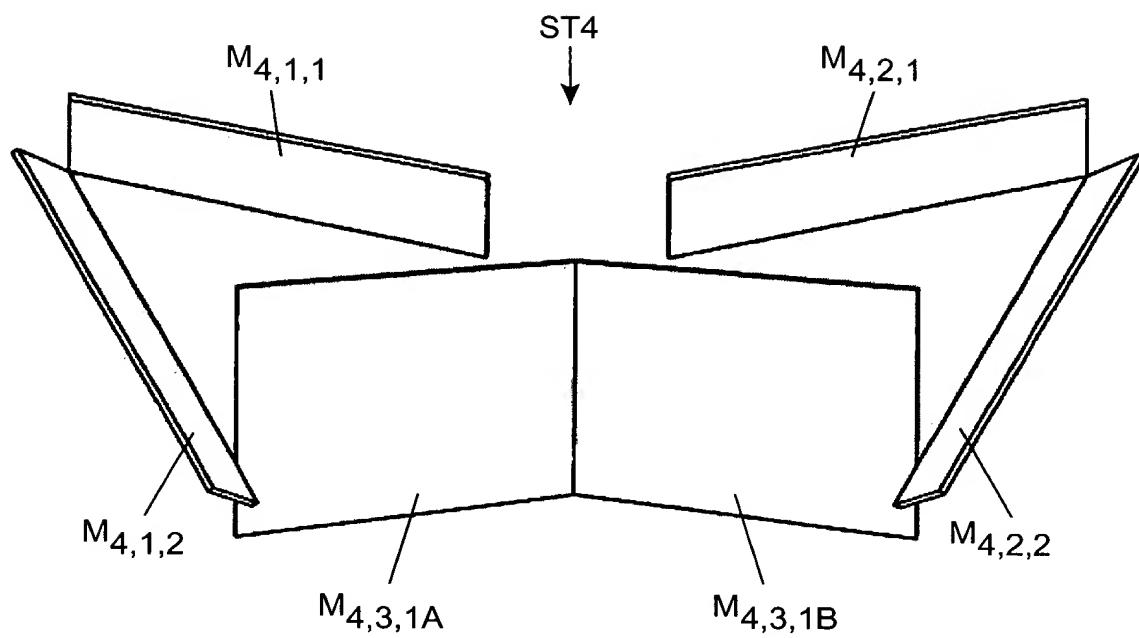
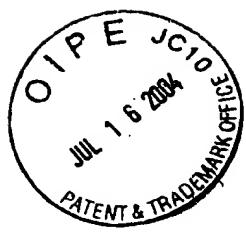


FIG. 6J1



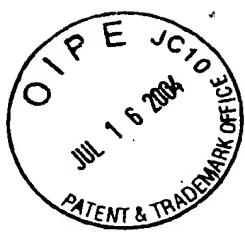
	N	O	P	Q	R	S	T	U	V	W	X
46	Facet	1									
47	x	y	z								
48	-0.6116	0.0000	0.788								
49	End			Middle			End				
50	x	y	z	x	y	z	x	y	z		
51	0.788	0.001	0.616	0.788	0.000	0.616	0.741	-0.367	0.562		
52	-0.938	0.335	0.087	-0.939	0.334	0.087	-0.999	-0.031	0.029		
53											
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	6.700	0.000	5.608								
59	7.400	0.000	3.322								
60	6.950	-3.000	2.897								
61	6.200	-3.000	5.345								
62											
63											
64											
65											
66											

FIG. 6J2



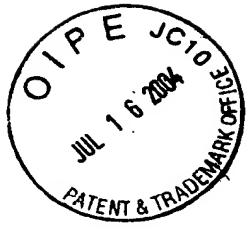
	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
46	Facet	2									
47	x	y	z								
48	-0.616	0.000	0.788								
49	End			Middle			End				
50	x	y	z	x	y	z	x	y	z		
51	0.766	0.000	0.643	0.766	0.000	0.643	0.711	-0.395	0.581		
52	-0.936	0.329	0.121	-0.936	0.329	0.121	-0.996	-0.065	0.058		
53											
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	6.700	0.000	5.608								
59	7.400	0.000	3.322								
60	6.950	-3.000	2.897								
61	6.200	-3.000	5.345								
62											
63											
64											
65											
66											

FIG. 6J3



	A	B	C	D	E	F	G	H	I	J	K	L
46	Low Elevation	Facet	3									
47		x	y	z								
48	Vector from Module	-0.616	0.000	0.788								
49		End					Middle					
50		x	y	z		x	y	z		x	y	z
51	Output Vectors From Disk	0.743	0.000	0.669	0.743	0.000	0.669	0.669	0.697	-0.362	0.619	
52	First Mirror Reflected Directions	-0.933	0.324	0.156	-0.933	0.324	0.156	0.156	-0.994	-0.035	0.101	
53	Second Mirror Reflected Directions											
54	Third Mirror Reflected Directions											
55												
56							Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners	
57			x	y	z		x	y	z	x	y	z
58			1	6.700	0.000	5.608						
59			2	7.400	0.000	3.322						
60			3	6.950	-3.000	2.897						
61			4	6.200	-3.000	5.345						
62			5									
63			6									
64			7									
65			8									
66												

FIG. 6J4



	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
46	Facet	4									
47	x	y	z								
48	-0.616	0.000	0.788								
49	End		Middle		End						
50	x	y	z	x	y	z	x	y	z		
51	0.719	0.000	0.695	0.719	0.000	0.695	0.664	-0.395	0.635		
52	-0.929	0.319	0.190	-0.929	0.319	0.190	-0.989	-0.075	0.129		
53											
54											
55											
56	Mirror 1 Corners		Mirror 2 Corners		Mirror 3 Corners						
57	x	y	z	x	y	z	x	y	z		
58	6.700	0.000	5.608								
59	7.400	0.000	3.322								
60	6.950	-3.000	2.897								
61	6.200	-3.000	5.345								
62											
63											
64											
65											
66											

FIG. 6J5



	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
46	Facet	5									
47	x	y	z								
48	-0.616	0.000	0.788								
49	End			Middle			End				
50	x	y	z	x	y	z	x	y	z		
51	0.669	0.000	0.743	0.669	0.000	0.743	0.621	-0.362	0.695		
52	-0.916	0.307	0.257	-0.916	0.307	0.257	-0.977	-0.052	0.206		
53											
54											
55											
56	Mirror 1 Corners			Mirror 2 Corners			Mirror 3 Corners				
57	x	y	z	x	y	z	x	y	z		
58	6.700	0.000	5.608								
59	7.400	0.000	3.322								
60	6.950	-3.000	2.897								
61	6.200	-3.000	5.345								
62											
63											
64											
65											

FIG. 6J6

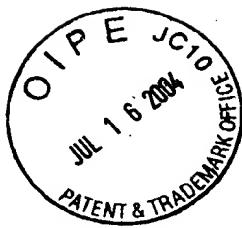


FIG. 6J7

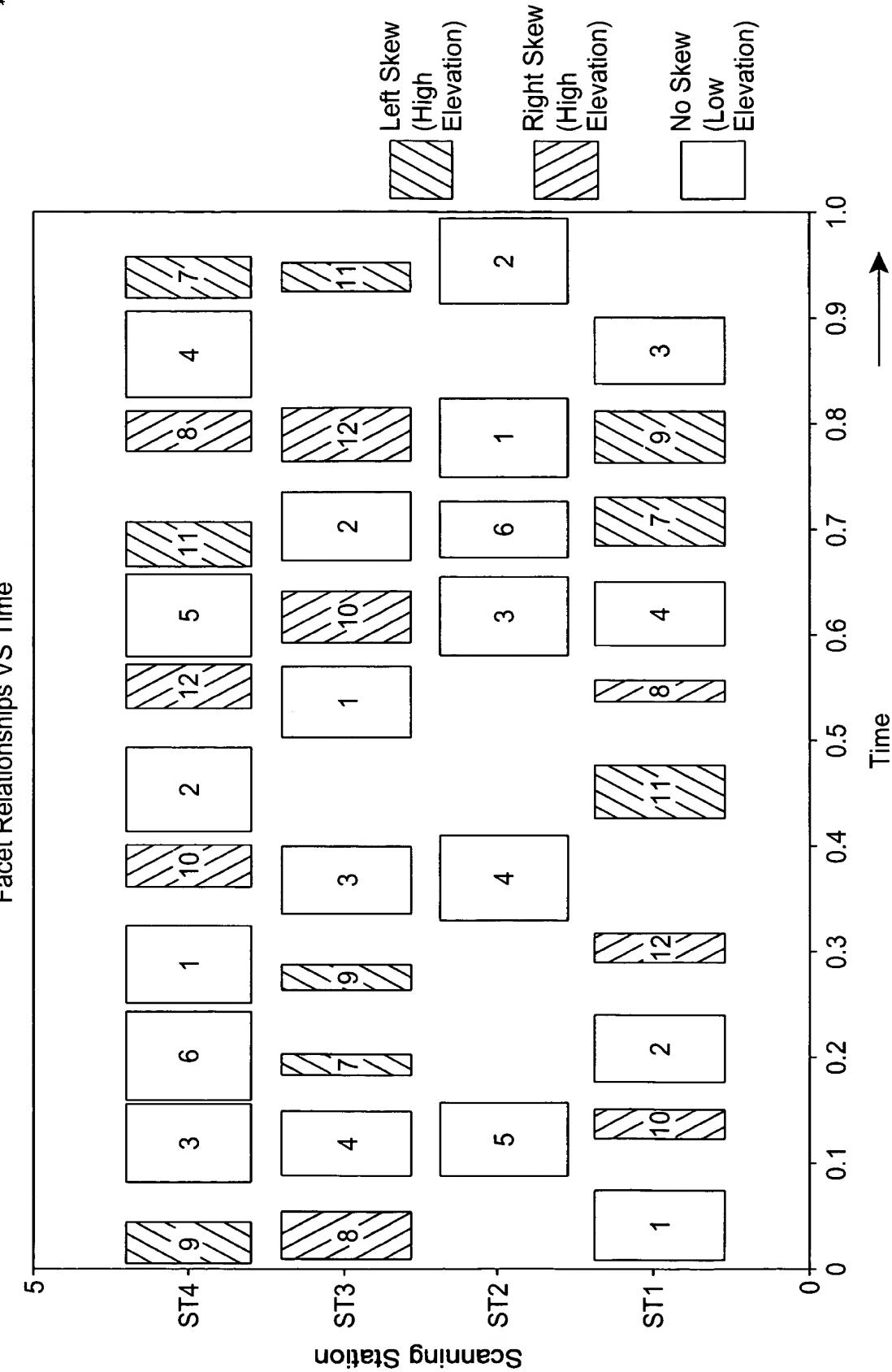
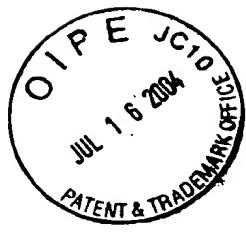


FIG. 6K

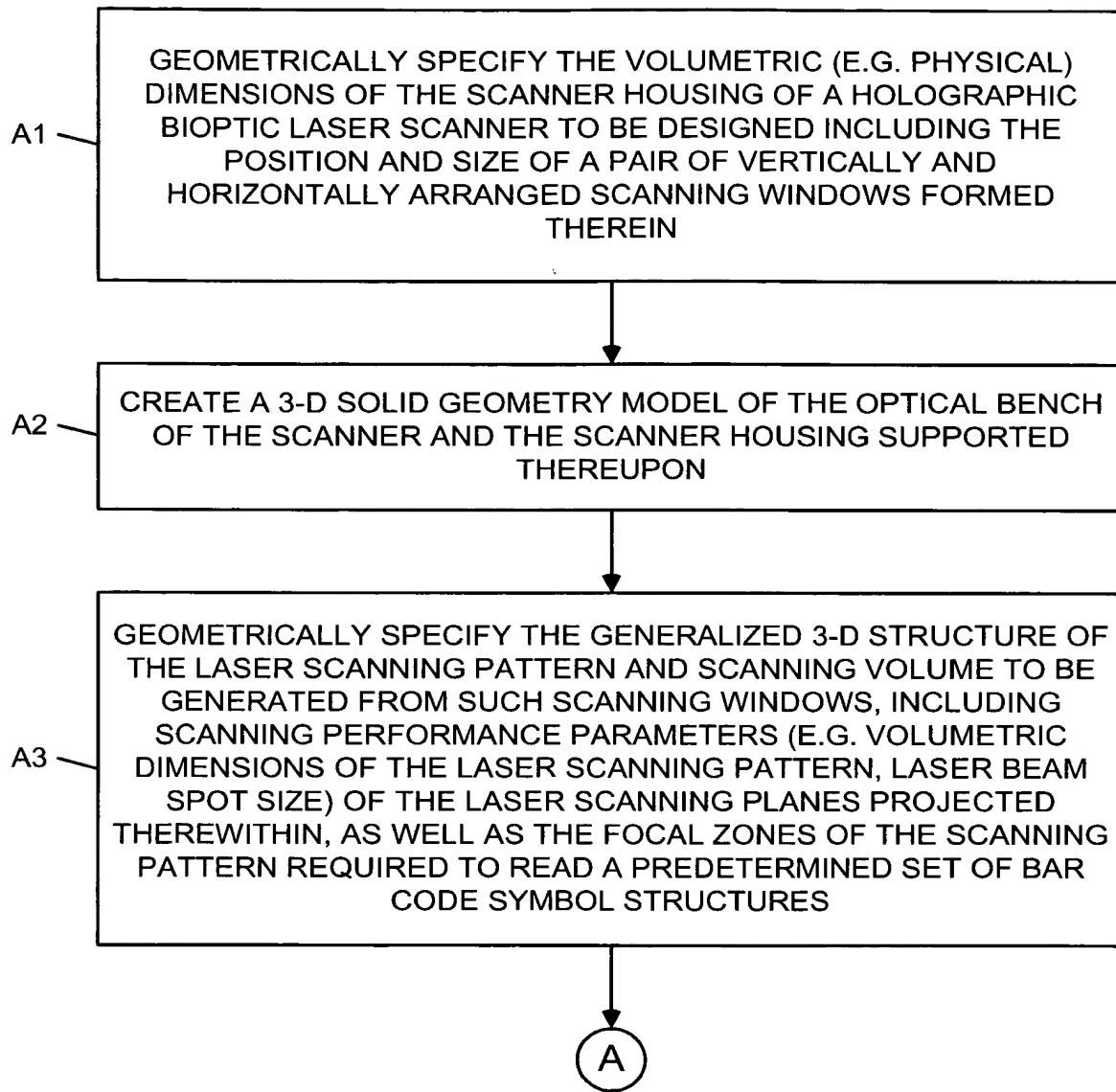
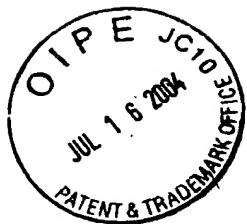


FIG. 7A

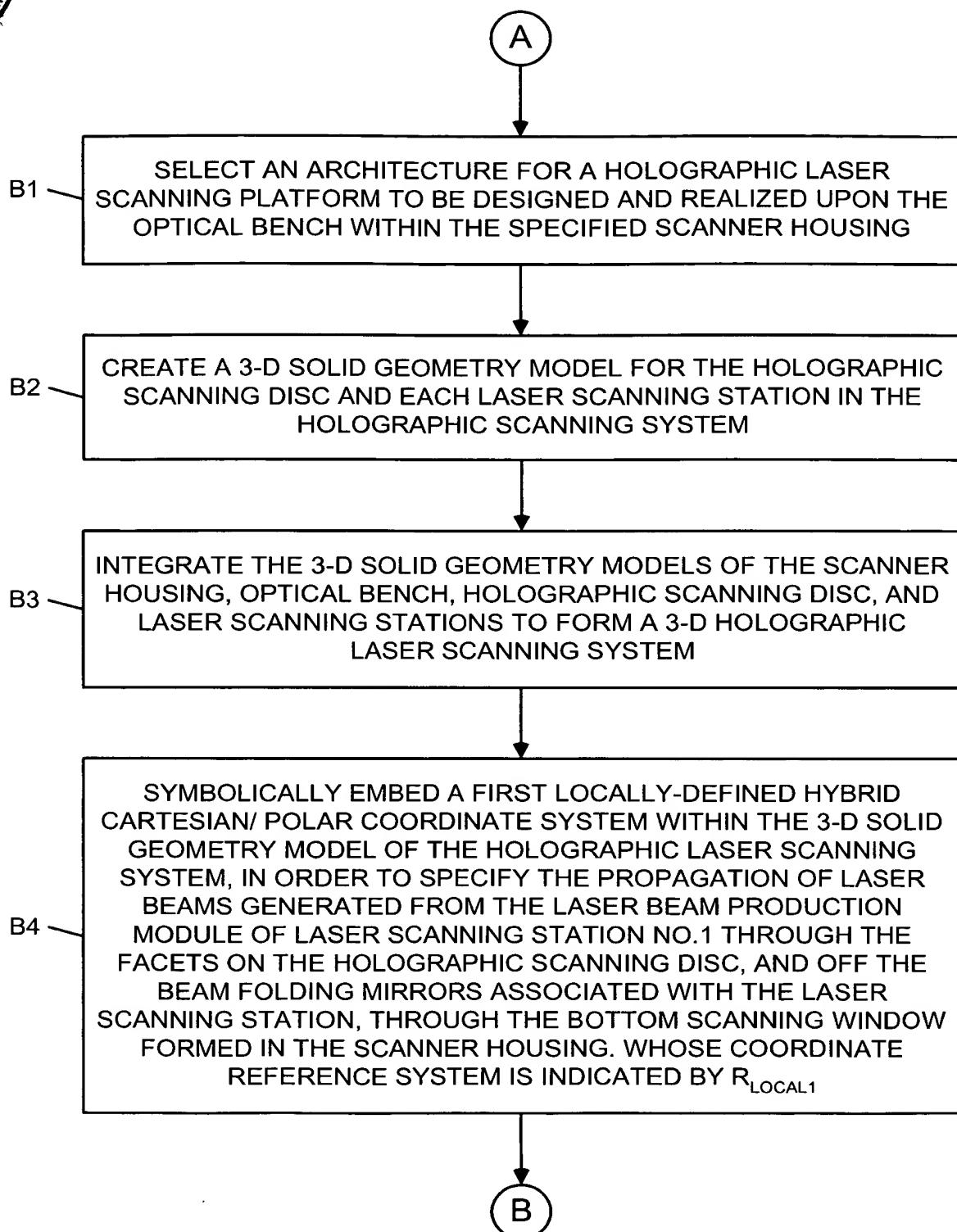


FIG. 7B

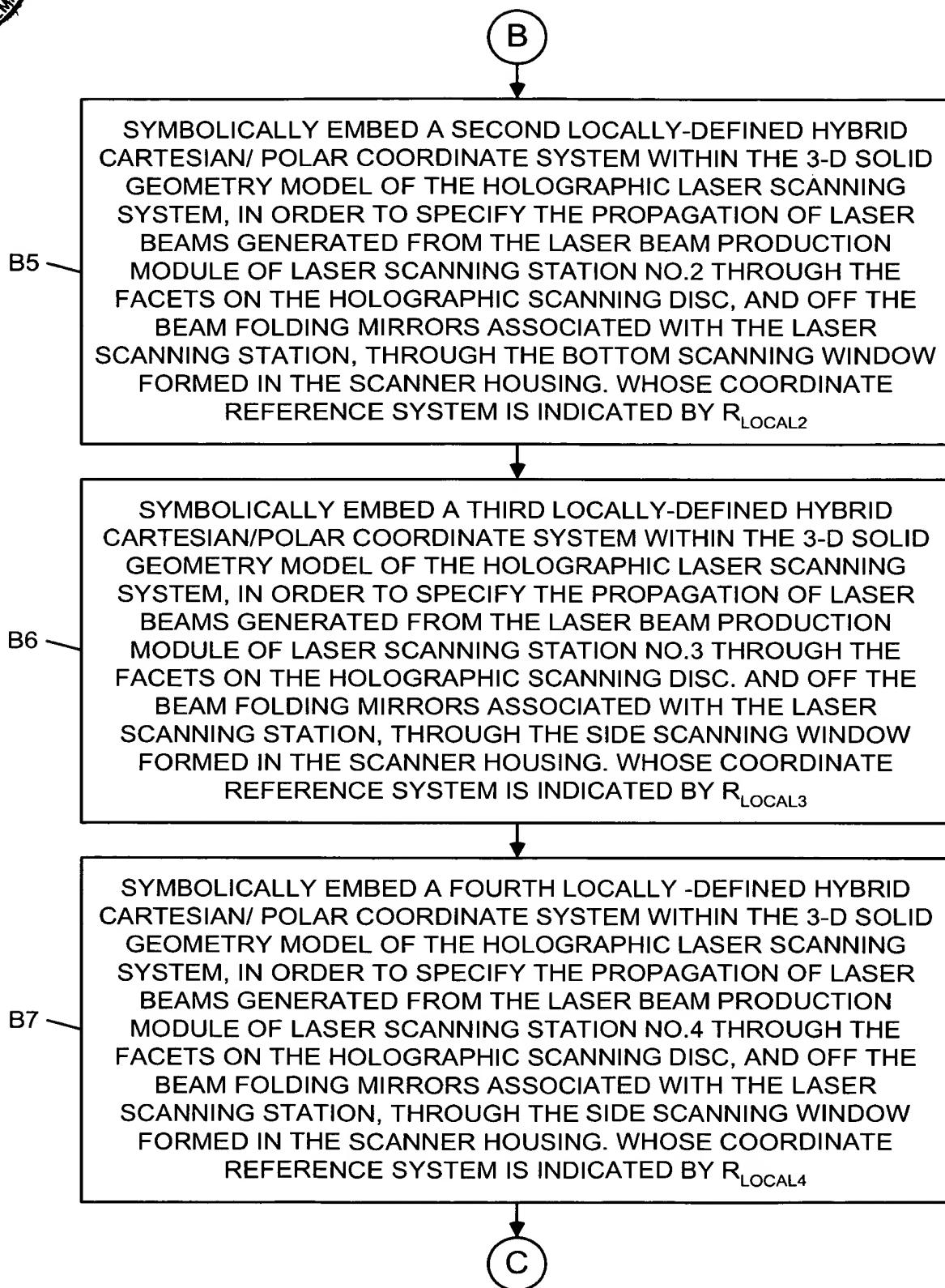


FIG. 7C

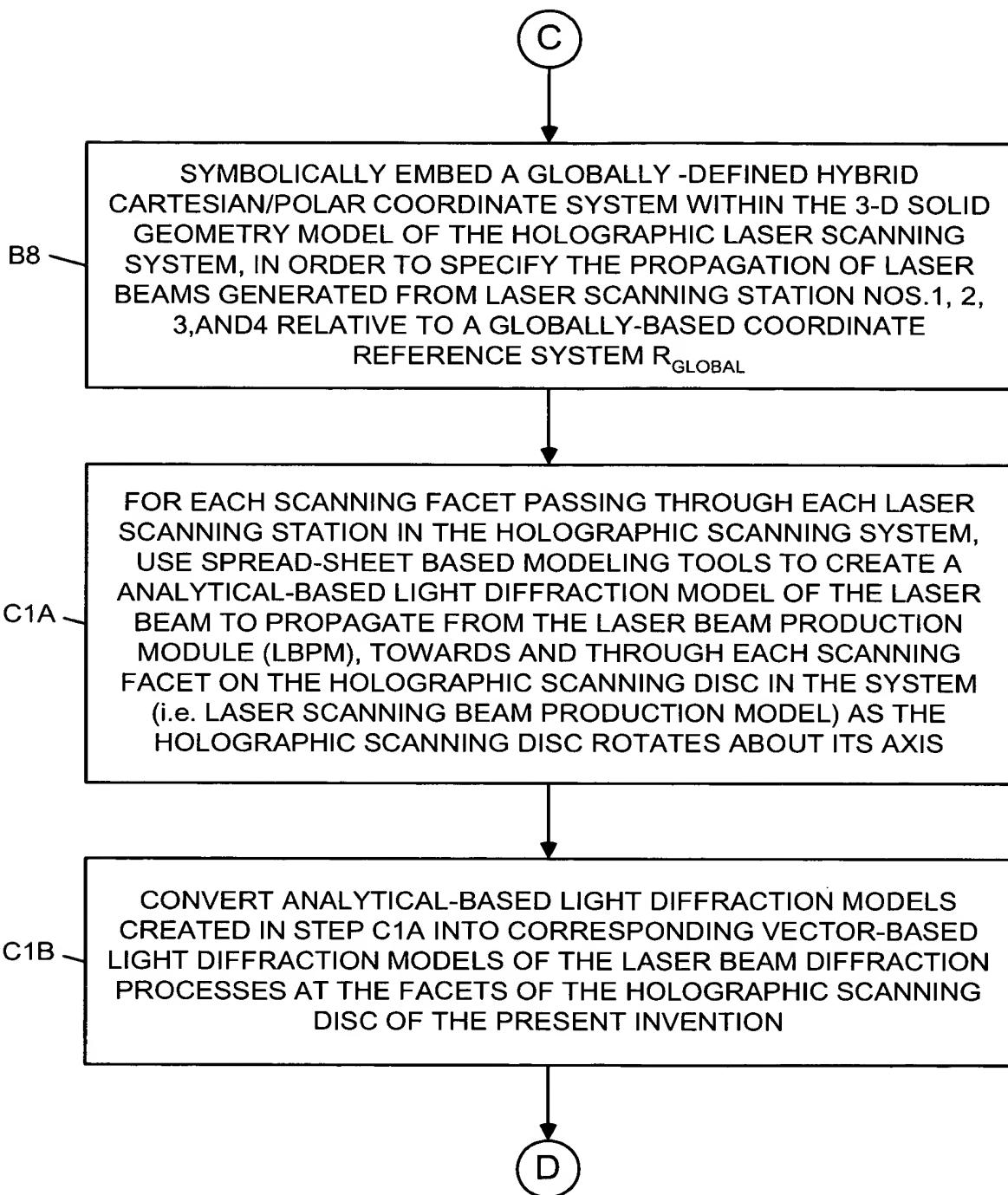
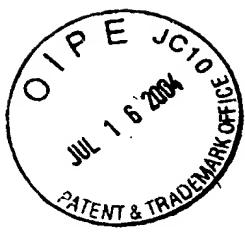


FIG. 7D

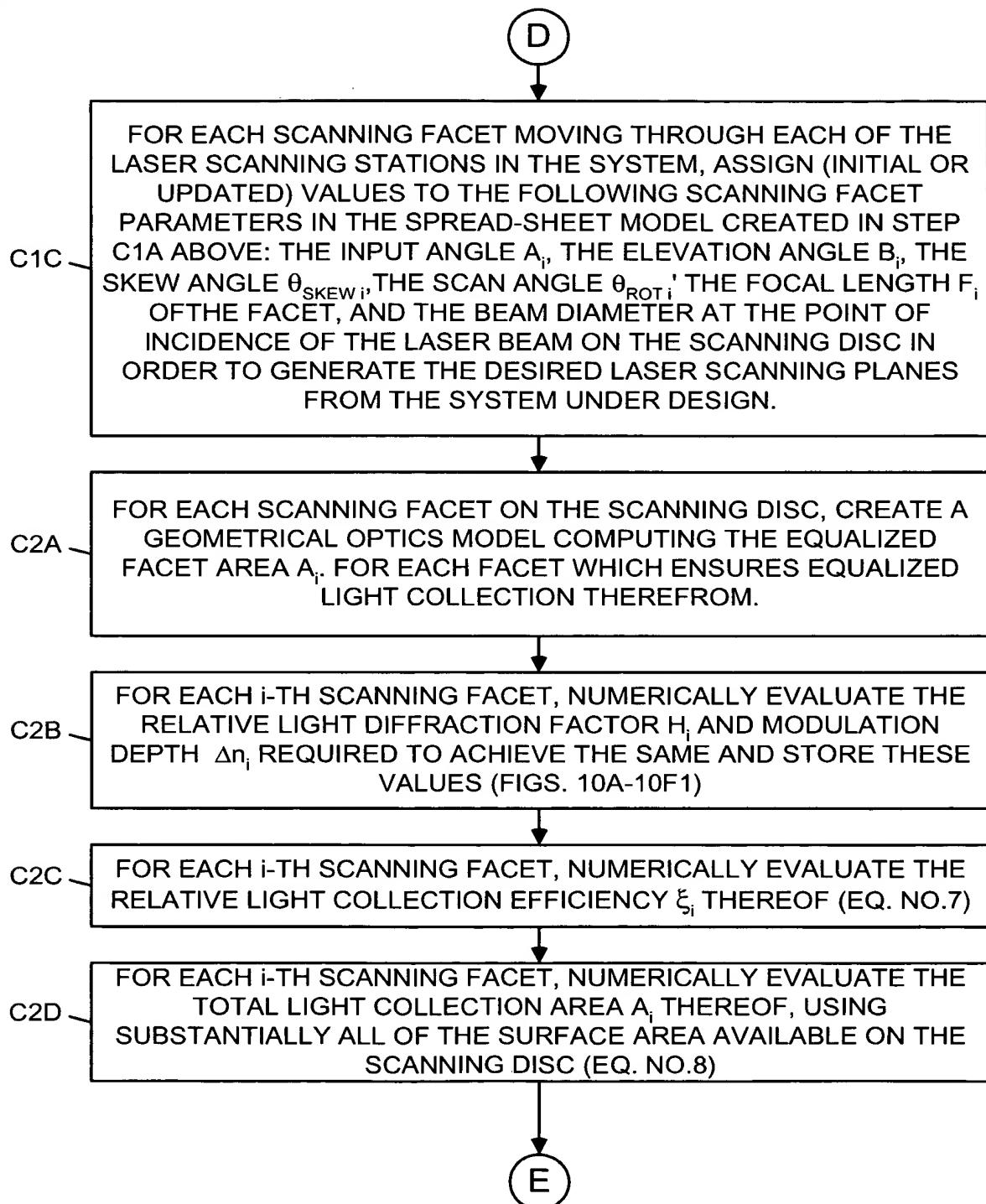


FIG. 7E

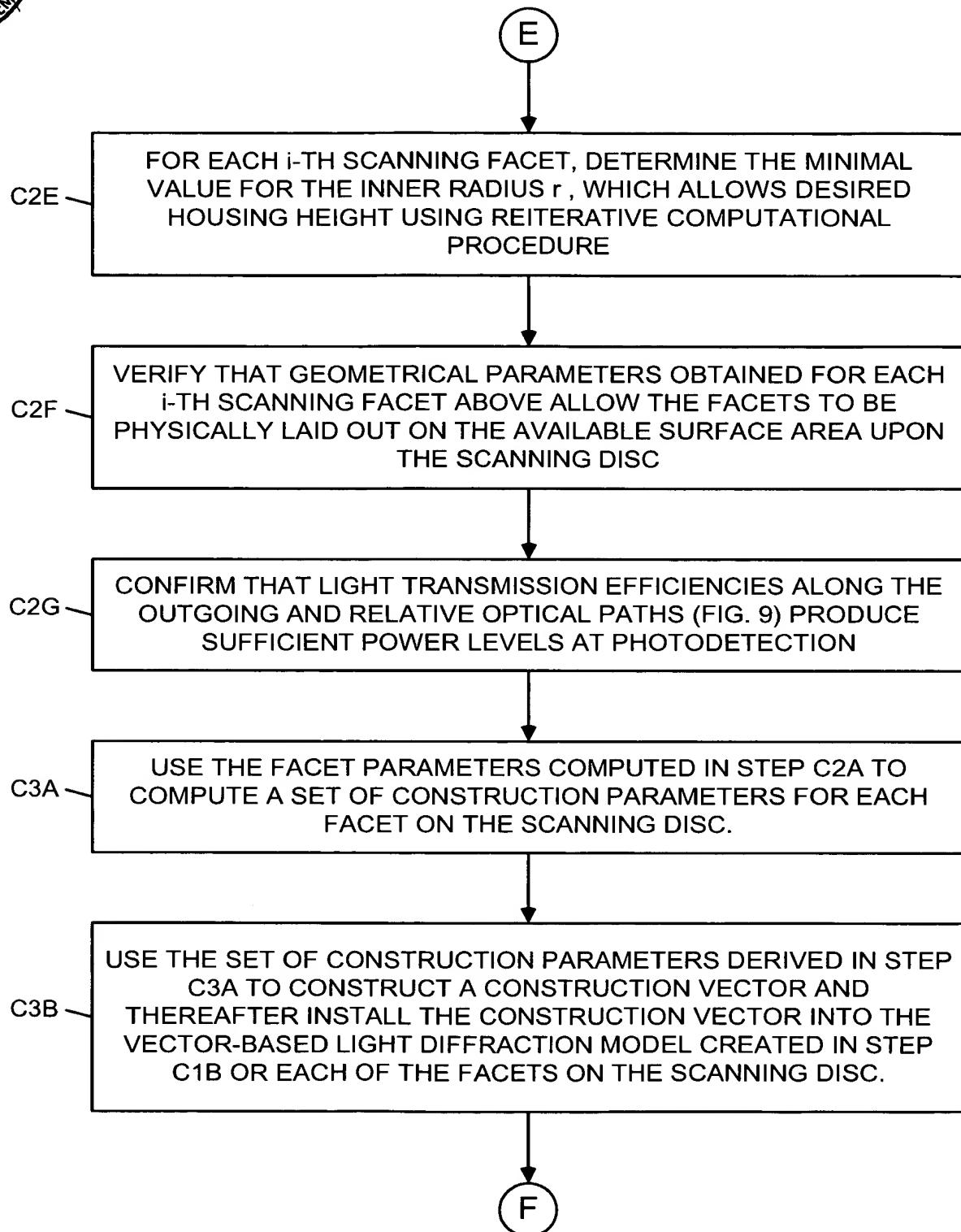


FIG. 7F

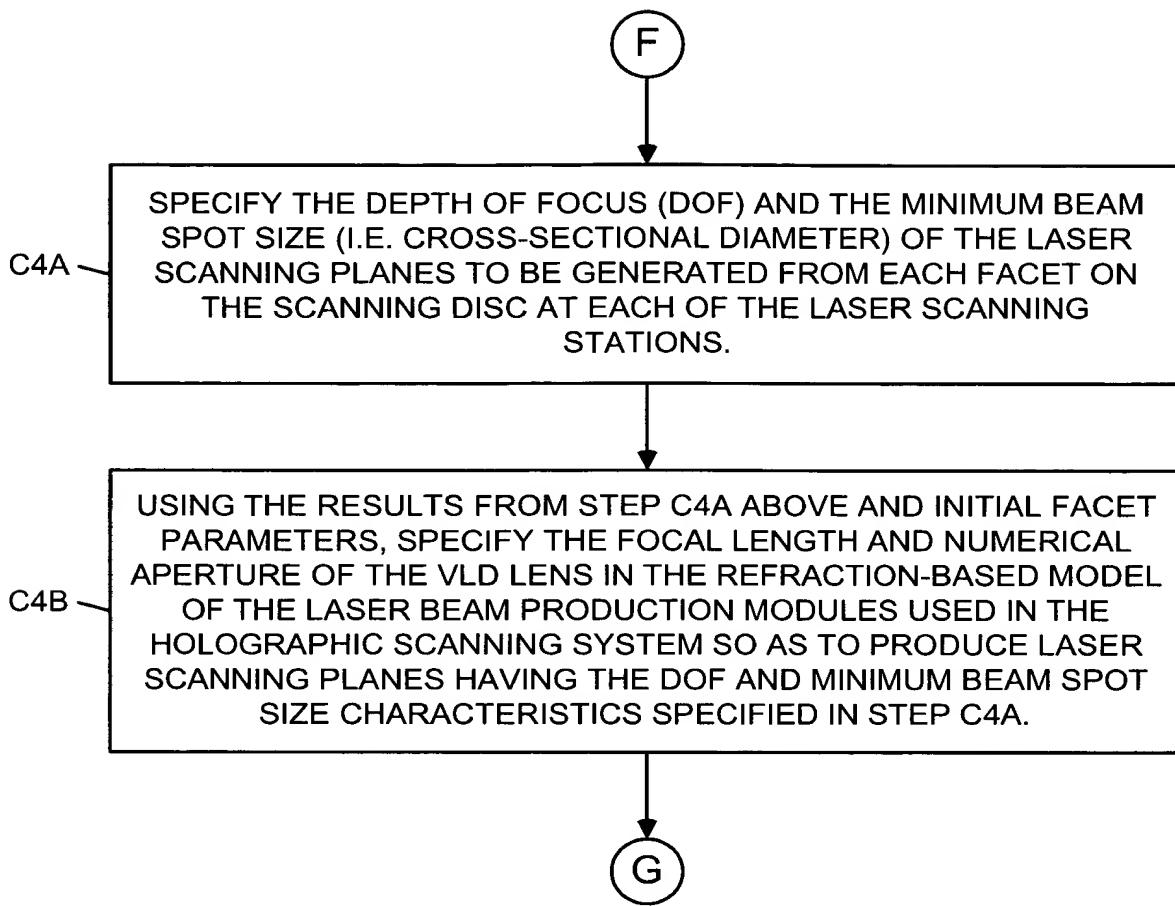
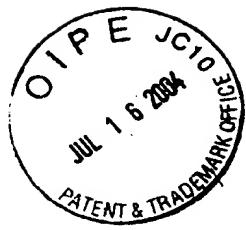


FIG. 7G

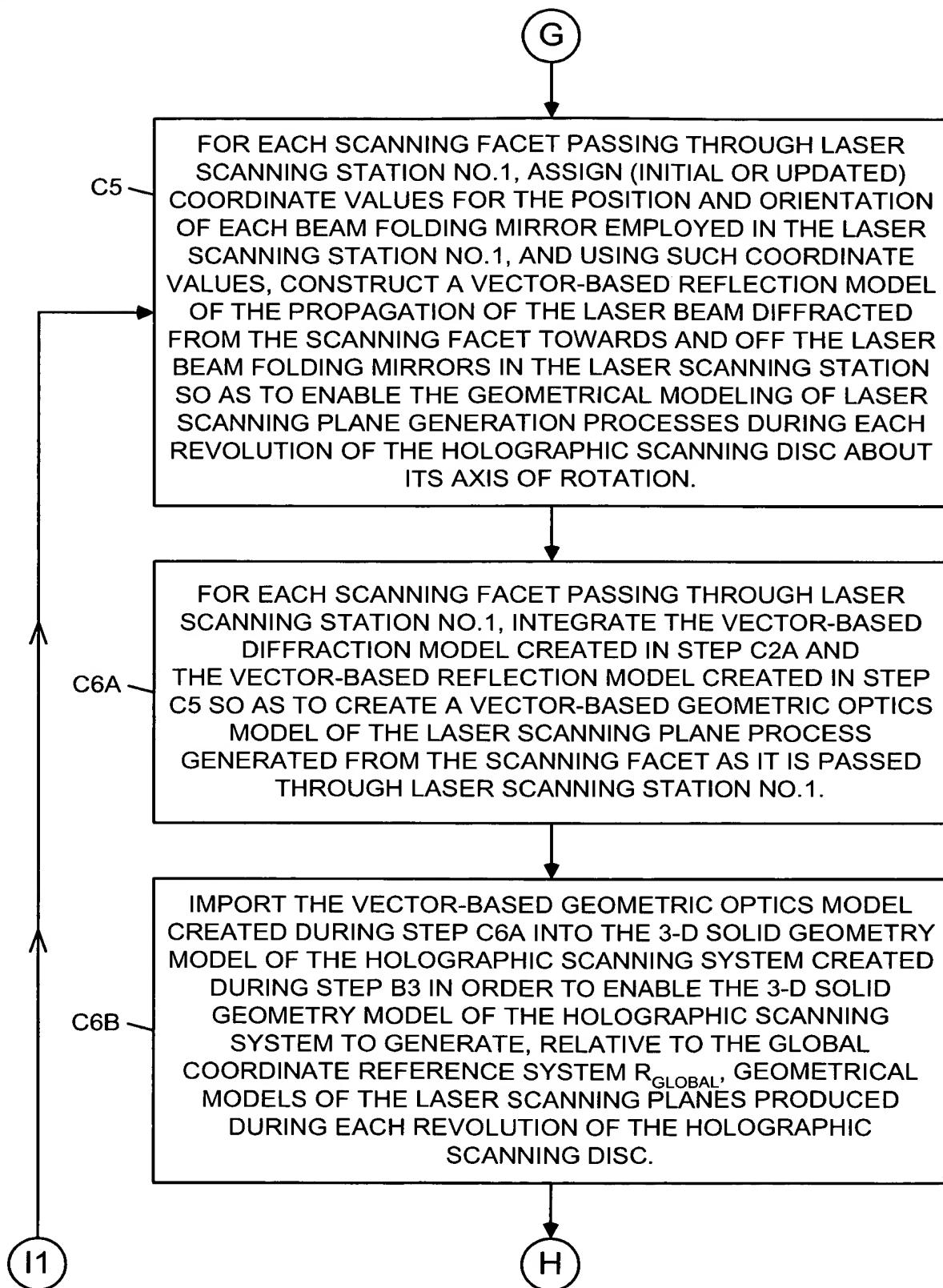


FIG. 7H

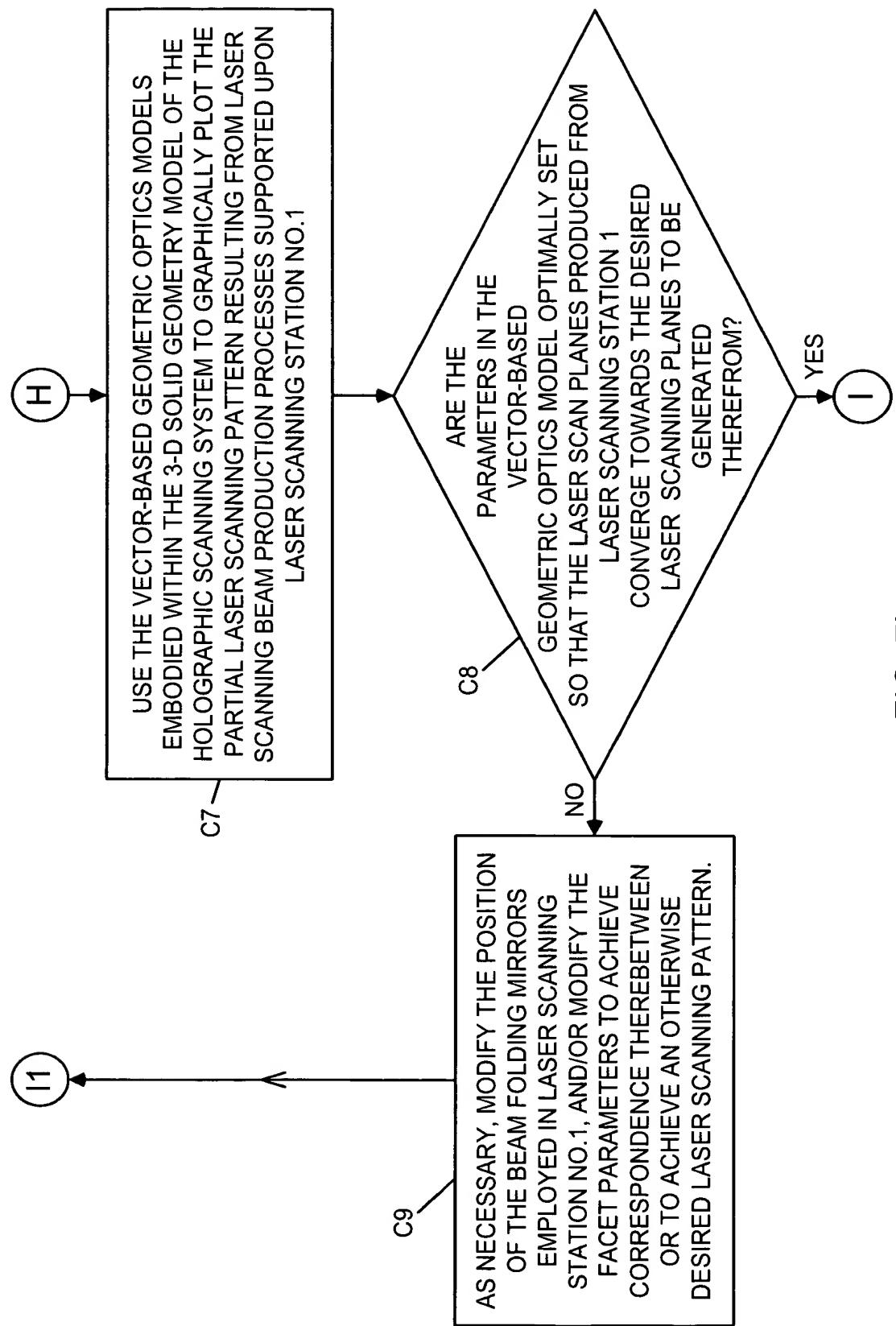


FIG. 7I

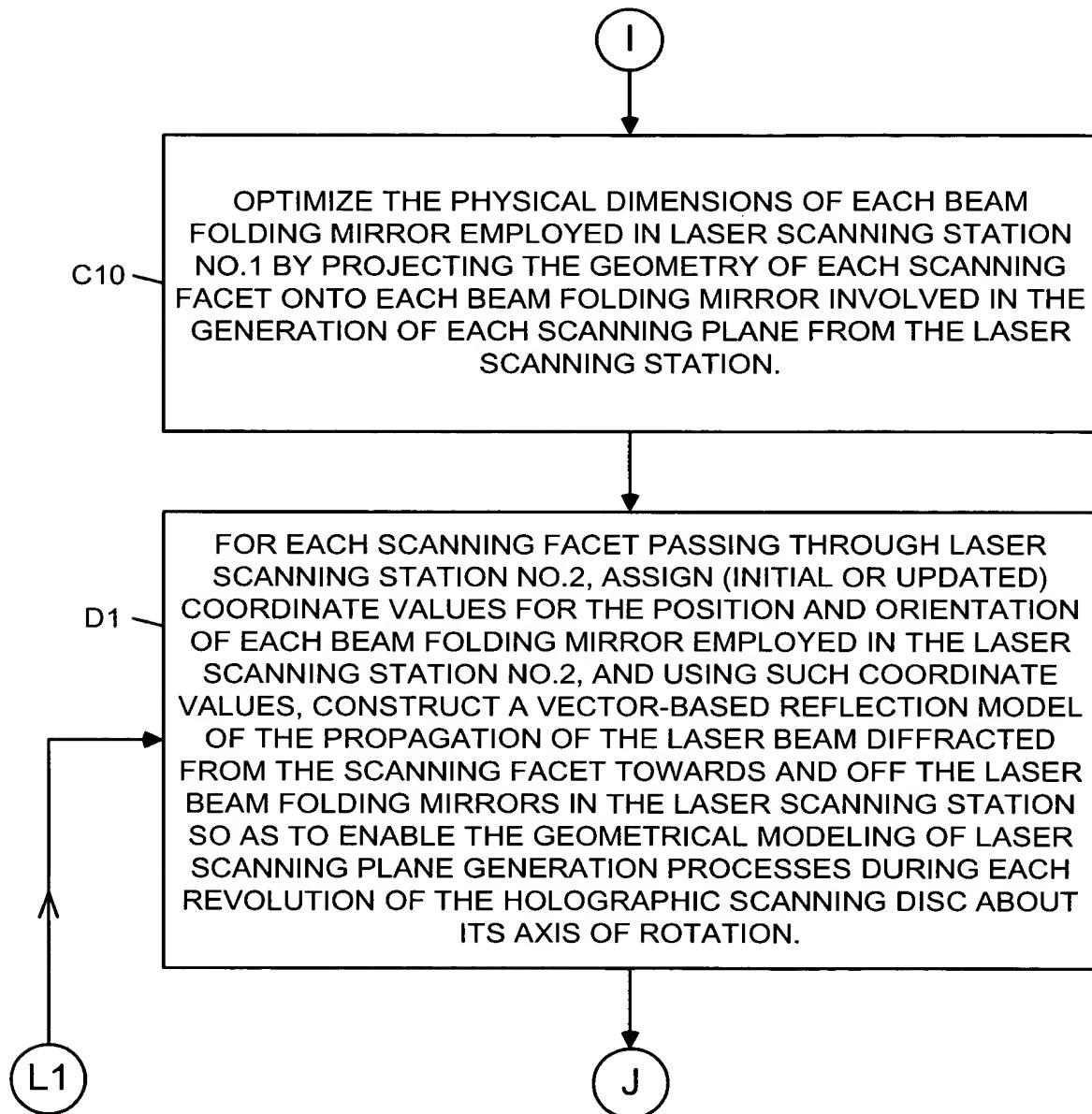


FIG. 7J

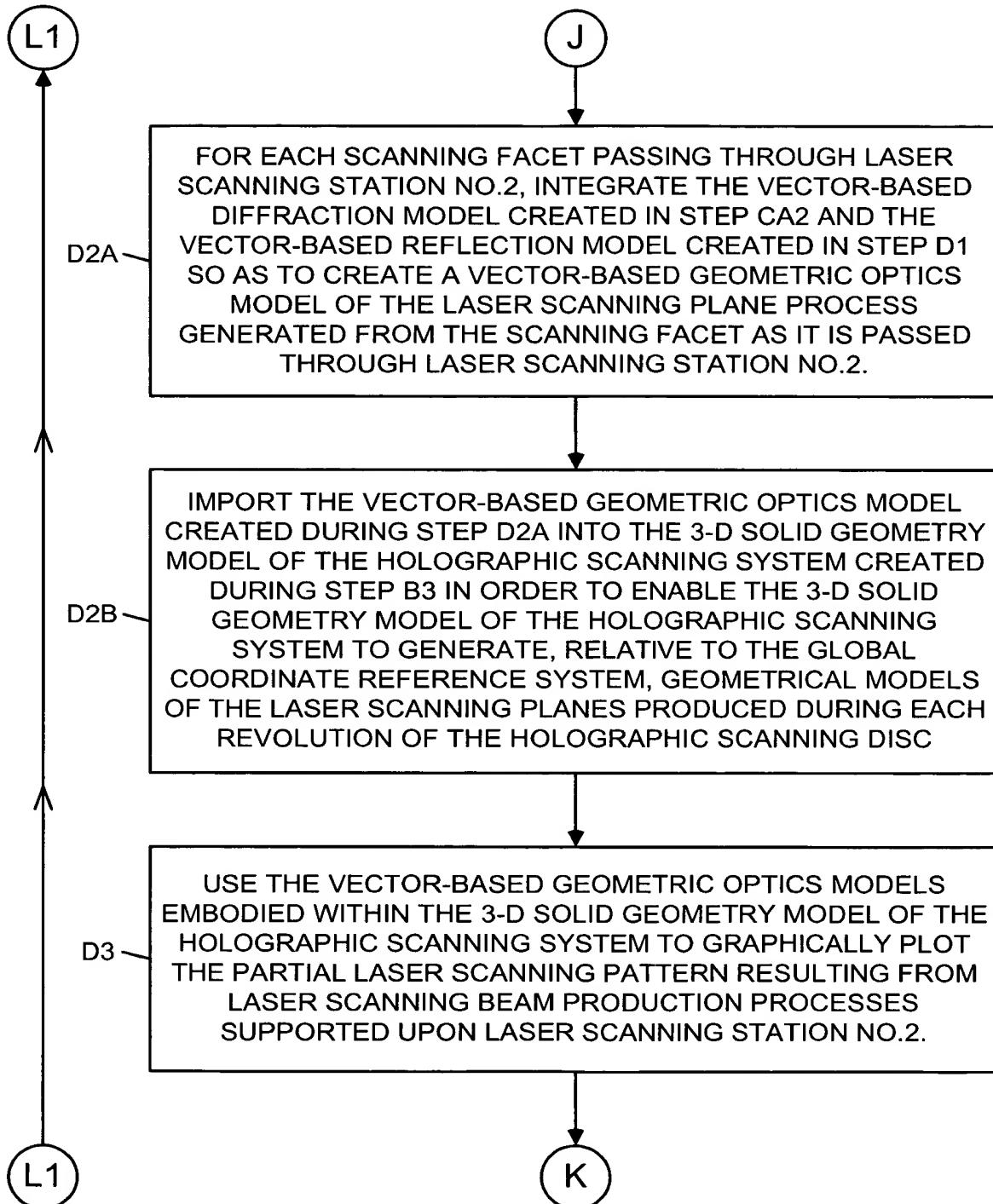


FIG. 7K

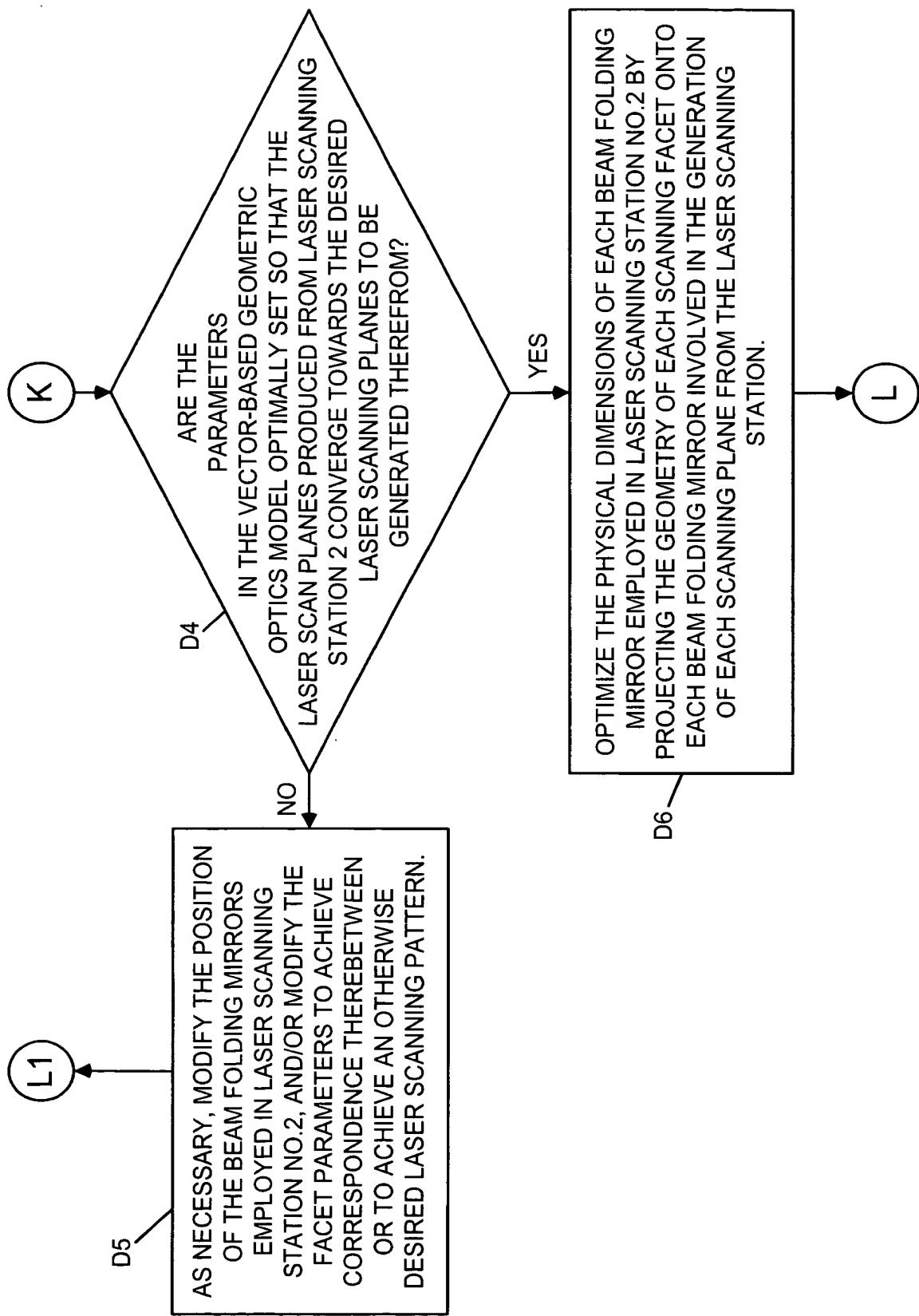
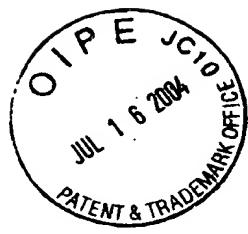


FIG. 7L

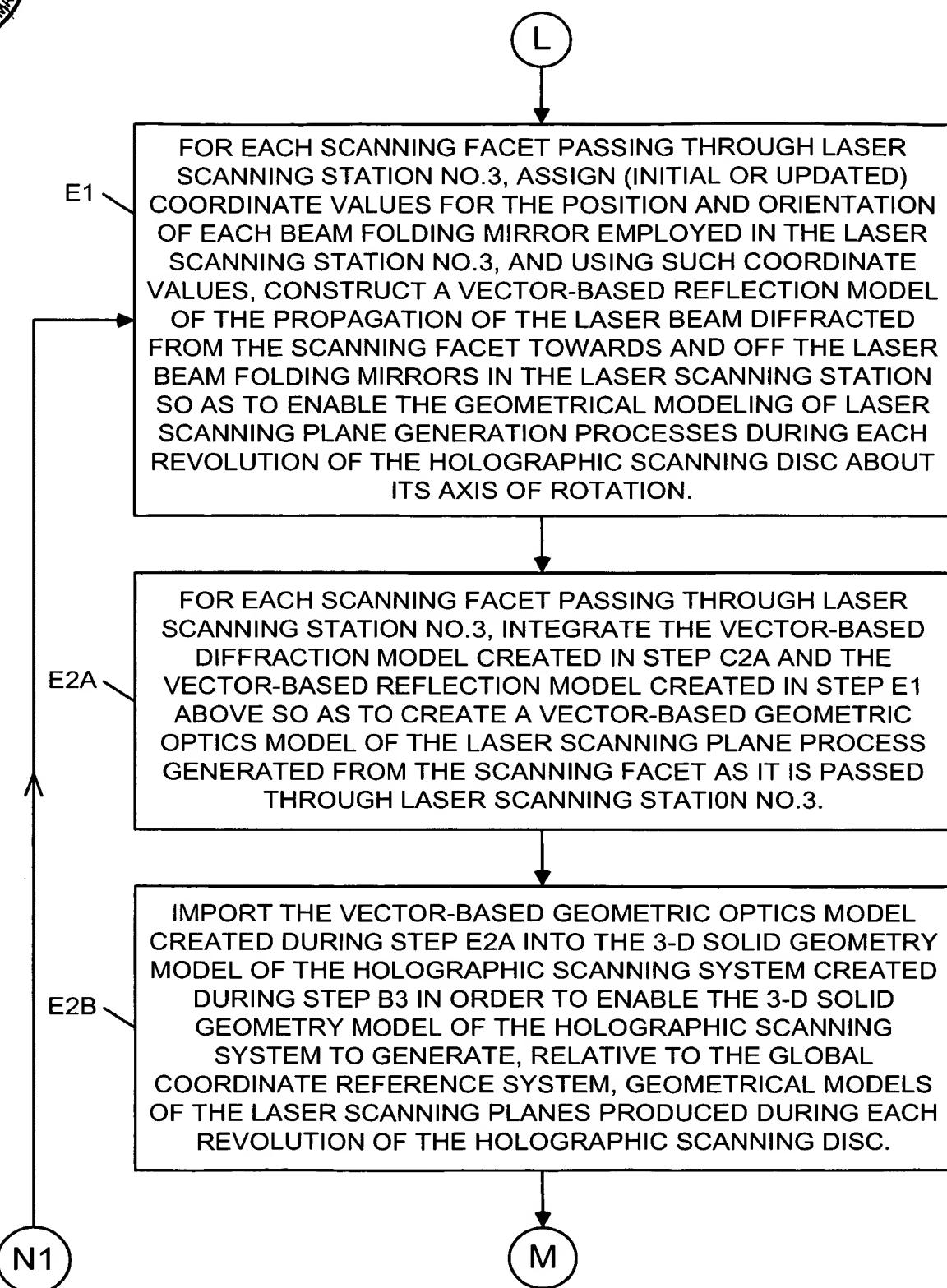
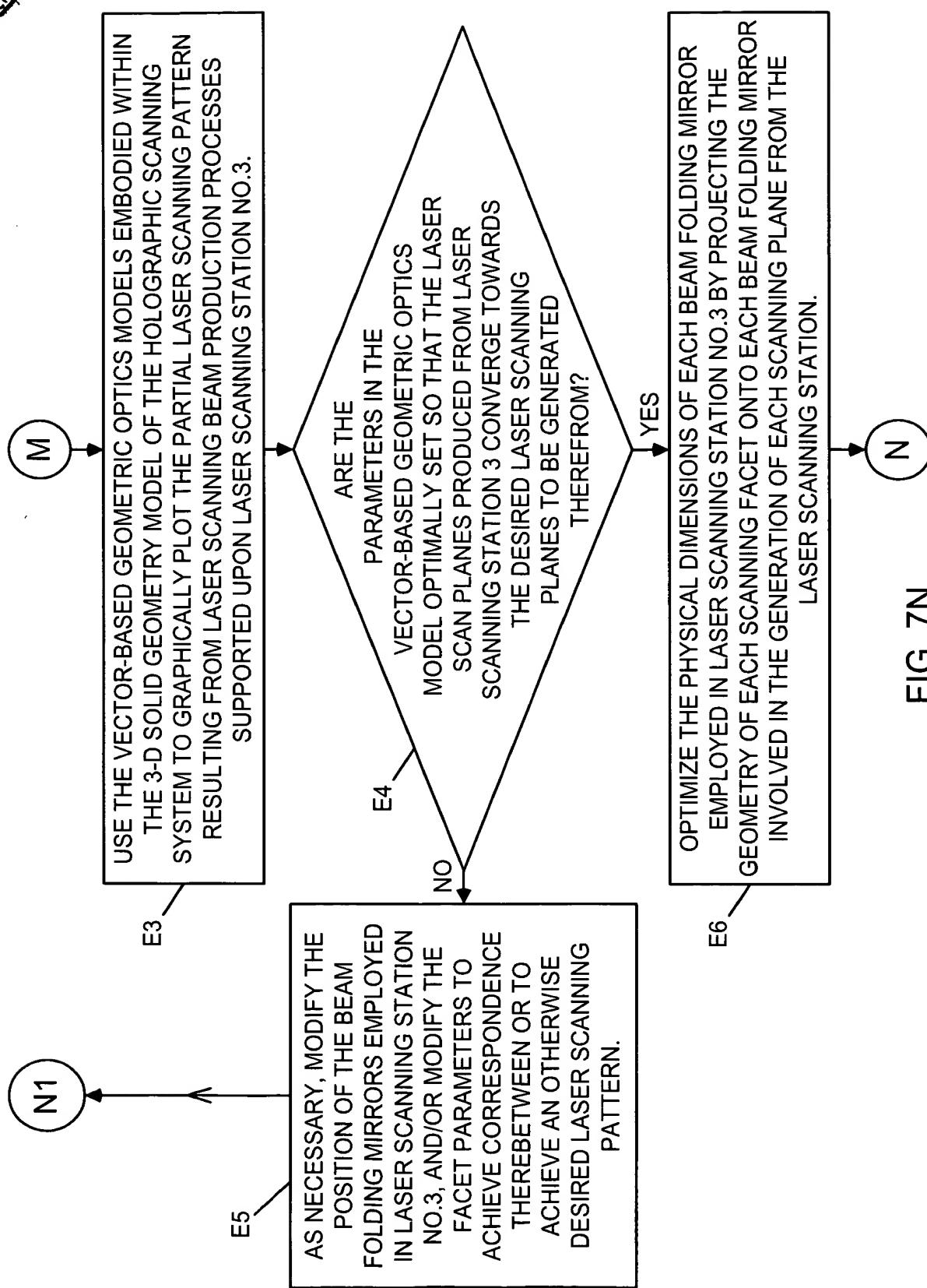
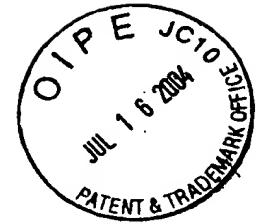


FIG. 7M



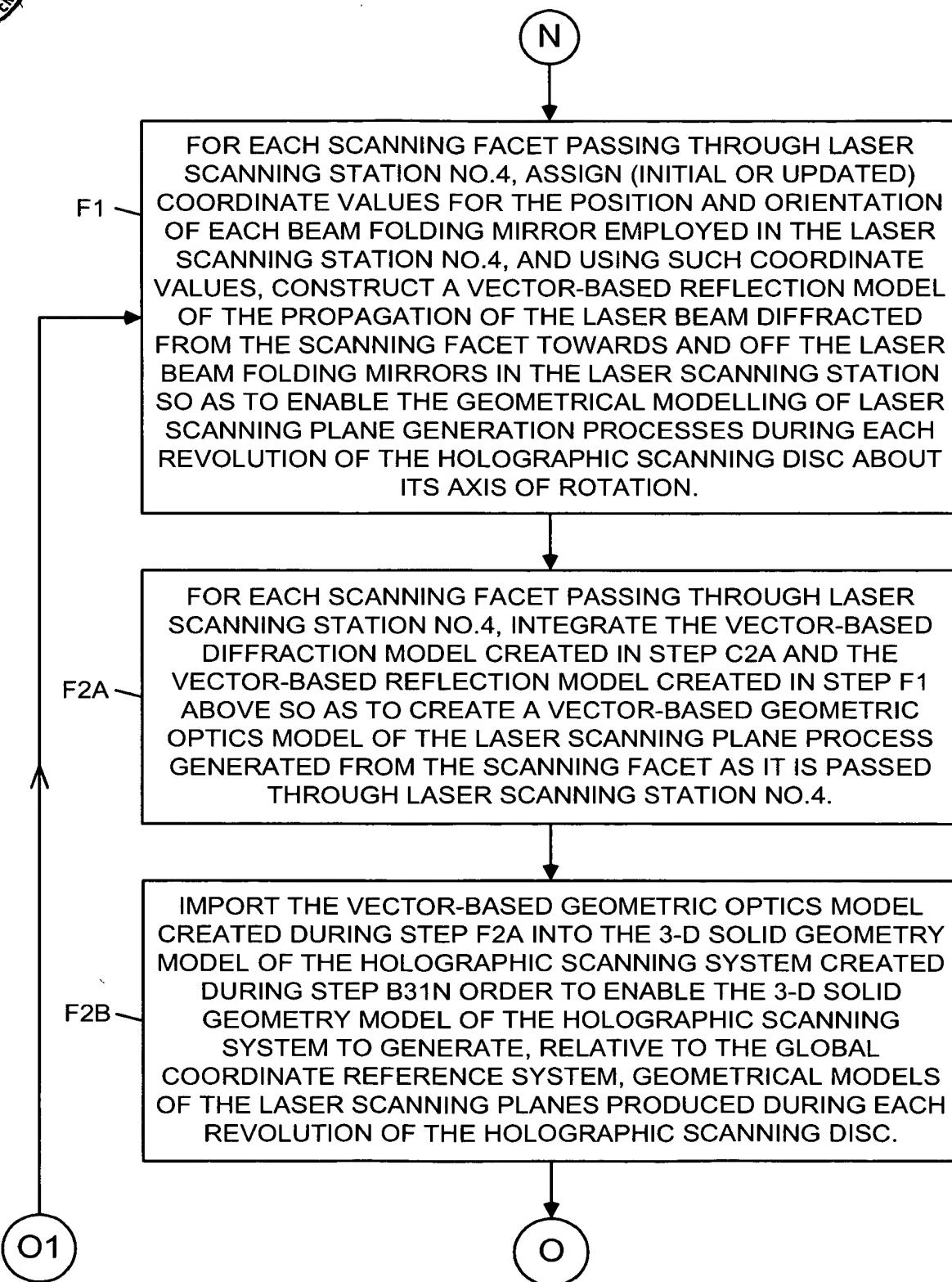


FIG. 7O

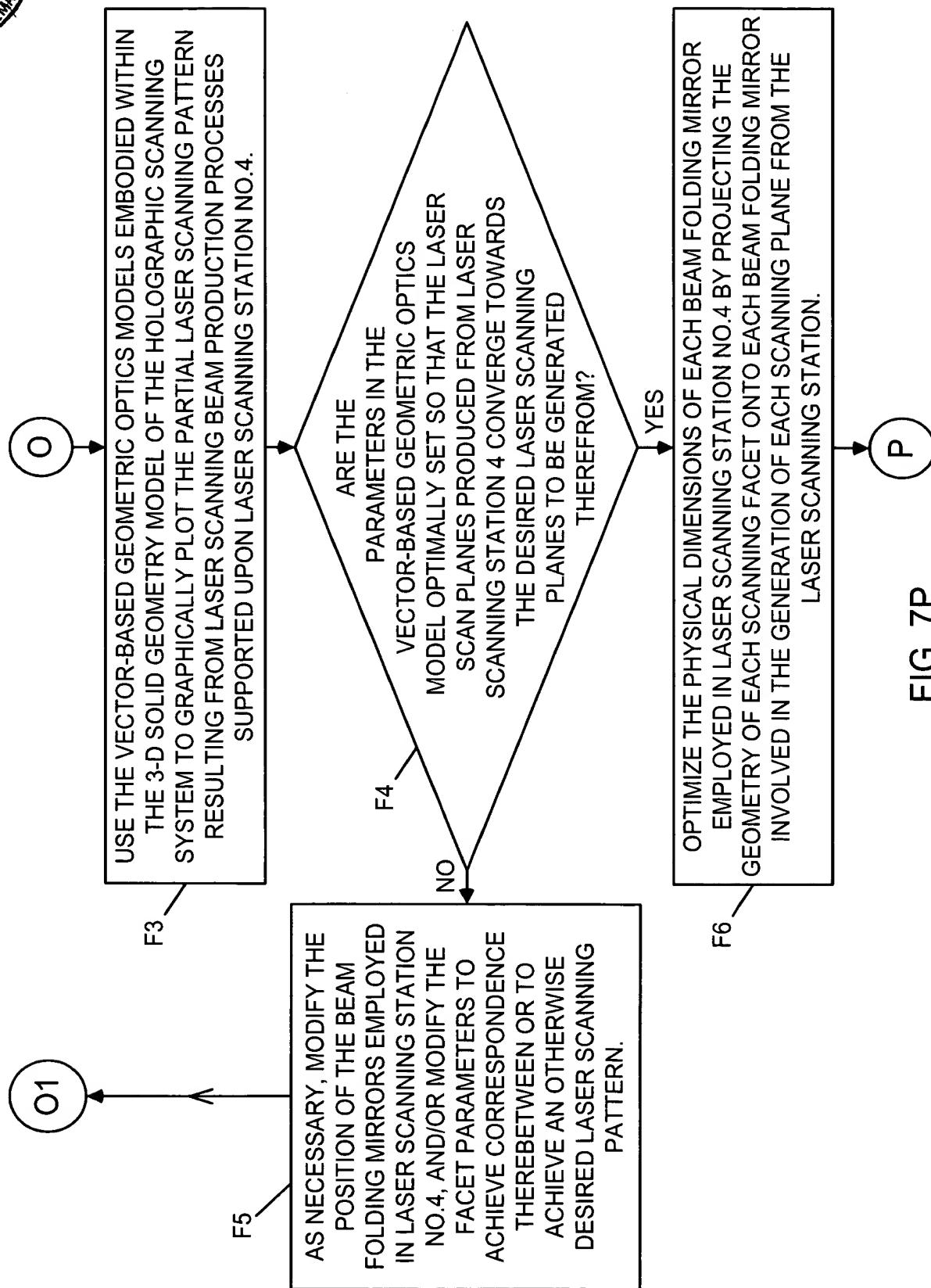
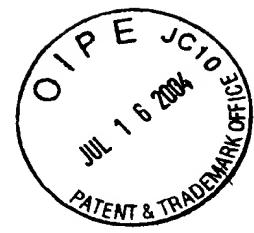


FIG. 7P

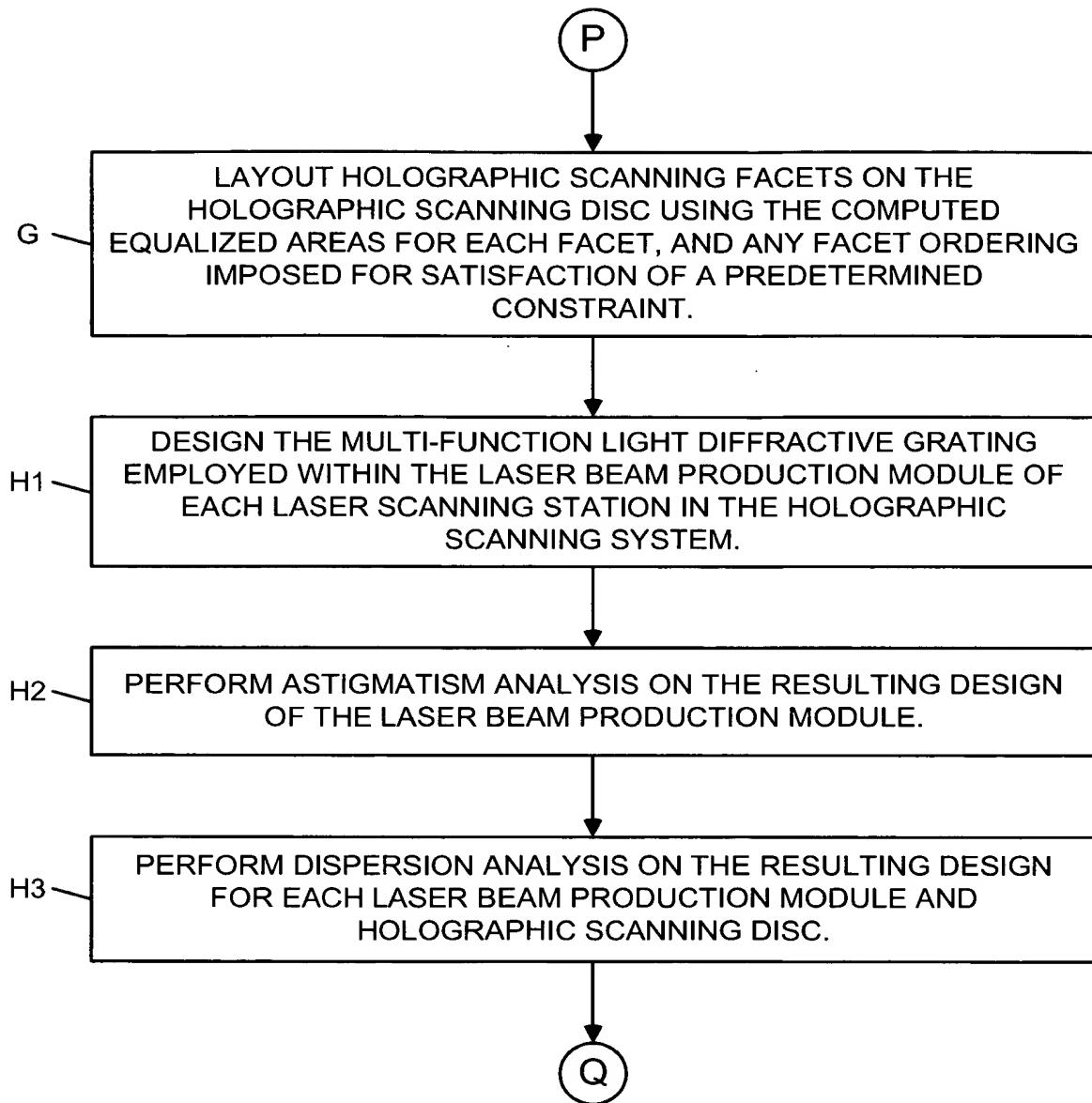


FIG. 7Q

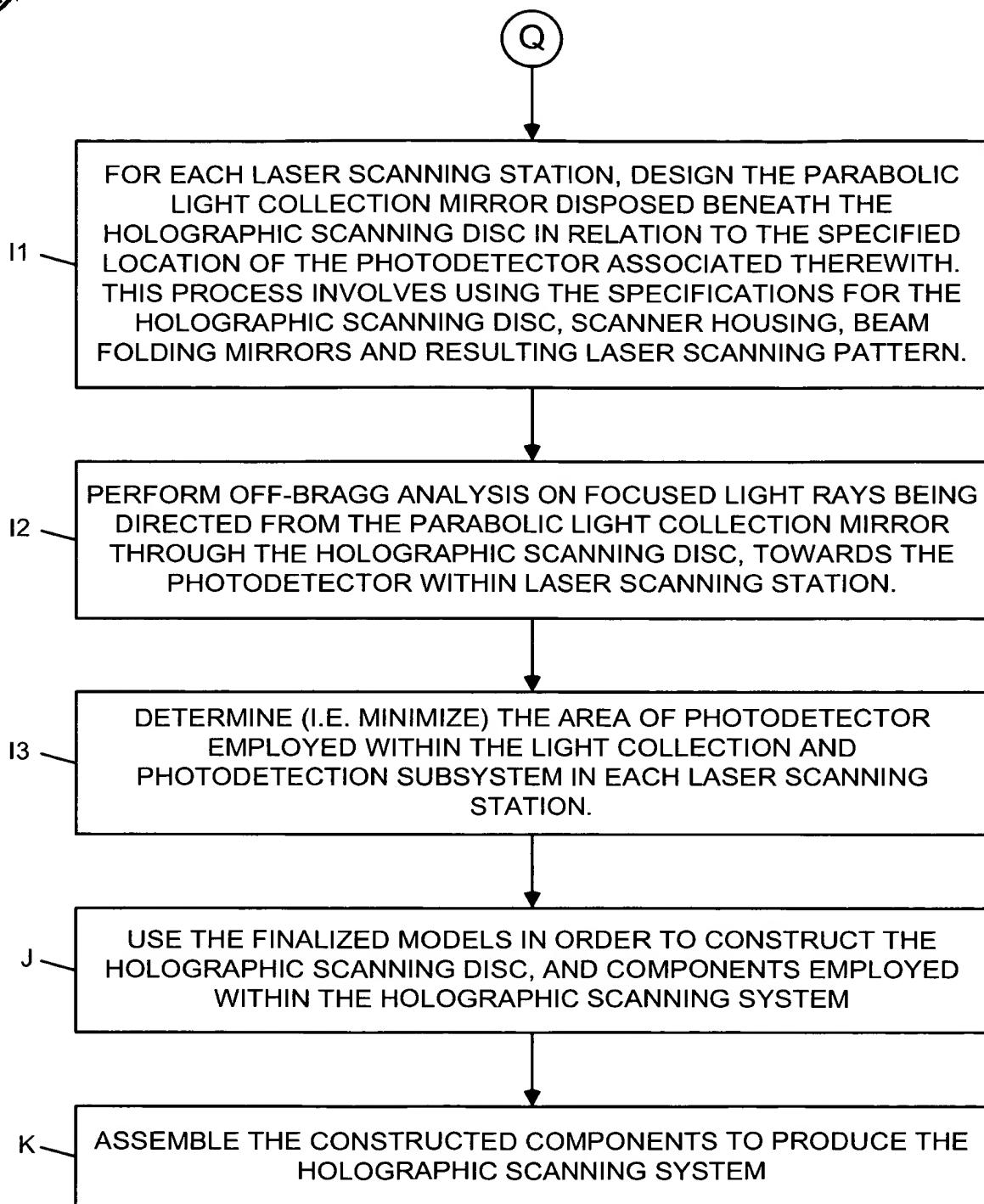


FIG. 7R

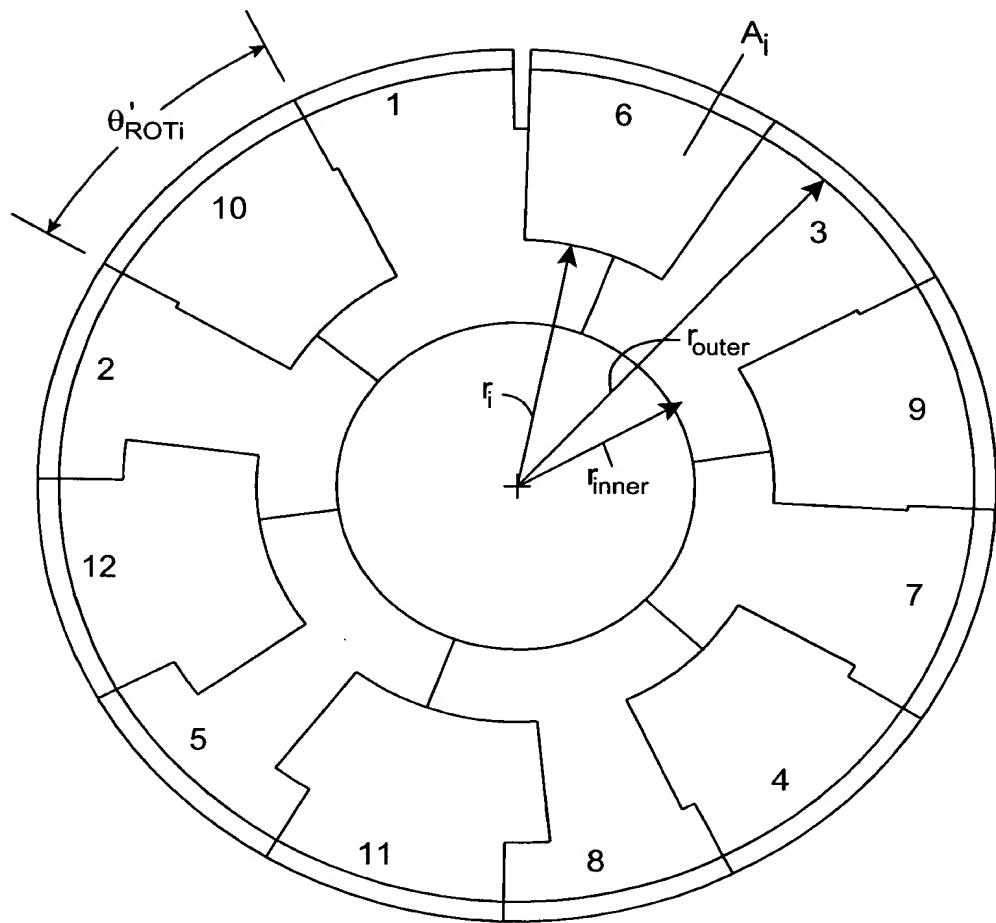


FIG. 8A

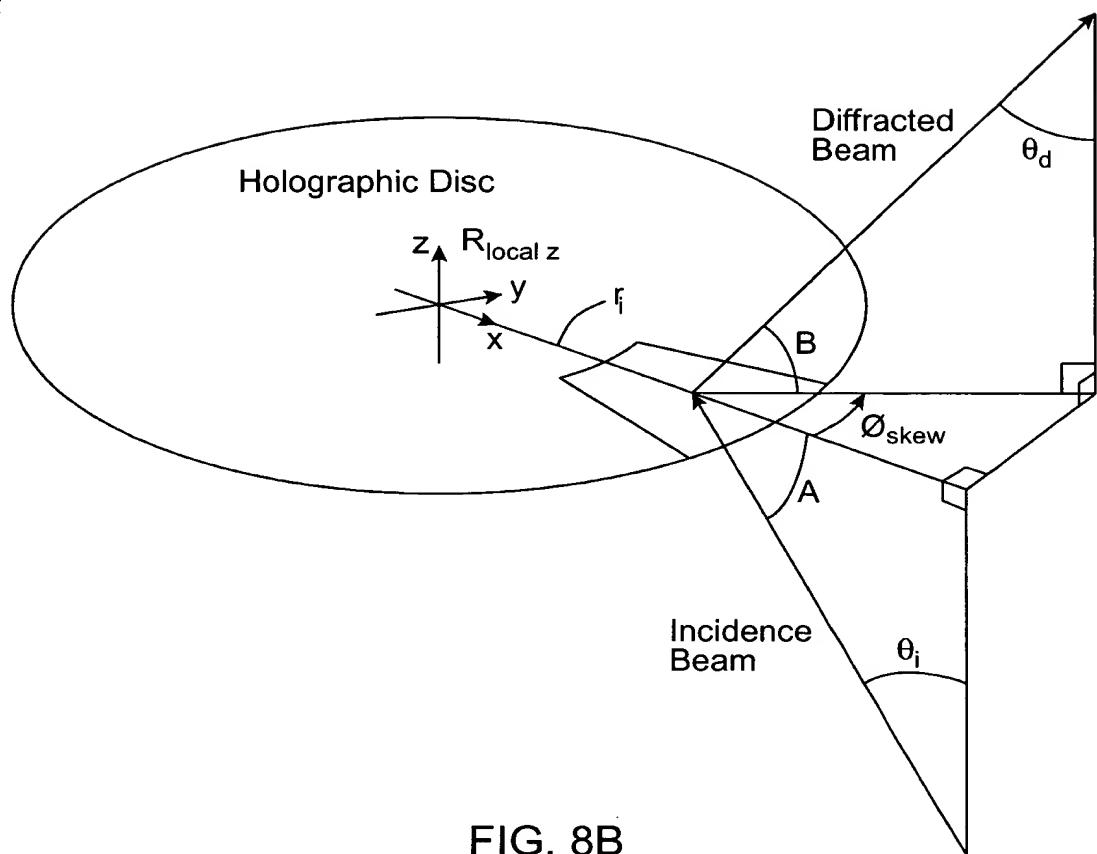
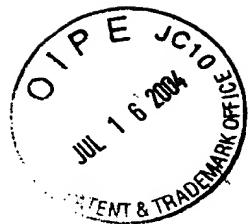


FIG. 8B

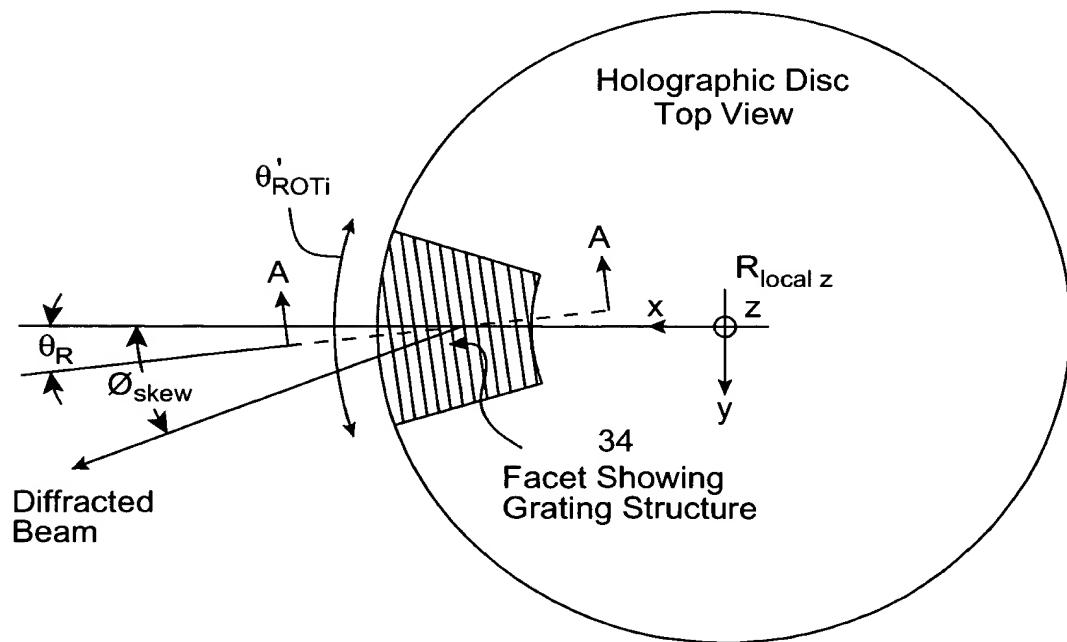
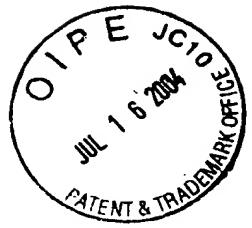


FIG. 8C



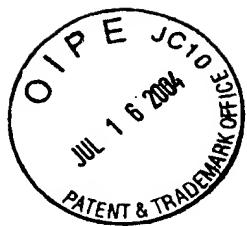
- (1) THE RADIUS TO BEAM-INCIDENT-POINT ON THE HOLOGRAPHIC SCANNING DISC, ASSIGNED THE SYMBOLIC NOTATION " $r_0$ "
- (2) THE DISTANCE FROM RADIUS TO BEAM-INCIDENT-POINT  $r_0$  TO BEAM FOLDING MIRROR, ASSIGNED THE SYMBOLIC NOTATION "L"
- (3) THE FACET NO. ON THE HOLOGRAPHIC SCANNING DISC, ASSIGNED THE SYMBOLIC NOTATION "i"
- (4) THE DISTANCE FROM THE BEAM INCIDENT POINT ON THE VIRTUAL SCANNING DISC TO THE FOCAL PLANE WITHIN WHICH THE (i, j)-TH SCANLINE RESIDES, ASSIGNED THE SYMBOLIC NOTATION " $f_i$ "
- (5) THE DIAMETER OF THE CROSS-SECTION OF THE LASER BEAM SCANNING STATION, ASSIGNED THE SYMBOLIC NOTATION " $d_{BEAM}$ "
- (6) THE ANGULAR GAP BETWEEN ADJACENT HOLOGRAPHIC SCANNING FACETS, ASSIGNED THE SYMBOLIC NOTATION " $d_{GAP}$ "
- (7) THE OUTER RADIUS OF THE AVAILABLE LIGHT COLLECTION REGION ON THE HOLOGRAPHIC SCANNING DISC, ASSIGNED THE SYMBOLIC NOTATION " $r_{OUTER}$ "
- (8) THE INNER RADIUS OF THE AVAILABLE LIGHT COLLECTION REGION ON THE HOLOGRAPHIC SCANNING FACET, ASSIGNED THE SYMBOLIC NOTATION " $r_{INNER}$ "
- (9) THE FOCAL LENGTH OF THE i-TH HOLOGRAPHIC SCANNING FACET FROM THE SCANNING FACET TO THE CORRESPONDING FOCAL PLANE WITHIN THE SCANNING VOLUME, ASSIGNED THE SYMBOLIC NOTATION " $f_i$ "
- (10) INCIDENT BEAM ANGLE, ASSIGNED THE SYMBOLIC NOTATION " $A_i$ "

FIG. 8D1



- (11) DIFFRACTED BEAM ANGLE, ASSIGNED THE SYMBOLIC NOTATION " $B_i$ "
- (12) THE SCAN ANGLE OF THE LASER BEAM, ASSIGNED THE SYMBOLIC NOTATION " $\theta_{Si}$ "
- (13) THE SCAN MULTIPLICATION FACTOR FOR THE i-TH HOLOGRAPHIC FACET, ASSIGNED THE SYMBOLIC NOTATION " $M_i$ "
- (14) THE FACET ROTATION ANGLE FOR THE i-TH HOLOGRAPHIC FACET, ASSIGNED THE SYMBOLIC NOTATION " $\theta_{Roti}$ "
- (15) ADJUSTED FACET ROTATION ANGLE ACCOUNTING FOR DEADTIME, ASSIGNED THE SYMBOLIC NOTATION " $\theta'_{Roti}$ "
- (16) THE LIGHT COLLECTION EFFICIENCY FACTOR FOR THE i-TH HOLOGRAPHIC FACET, NORMALIZED RELATIVE TO THE 16TH FACET, ASSIGNED THE SYMBOLIC NOTATION " $\xi_i$ "
- (17) THE MAXIMUM LIGHT COLLECTION AREA FOR THE i-TH HOLOGRAPHIC FACET, ASSIGNED THE SYMBOLIC NOTATION " $Area_i$ "
- (18) THE ANGLE OF SKEW OF THE DIFFRACTED LASER BEAM AT THE CENTER OF THE i-TH HOLOGRAPHIC FACET, ASSIGNED THE SYMBOLIC NOTATION " $\phi_{Skew}$ "

FIG. 8D2



## PARAMETER EQUATION USED IN THE SPREADSHEET DESIGN OF THE SCANNER

(1)  $f_i$  Focal Length -  $f_{i-th}$  facet

(2)  $B_i$  Elevation Angle;  $\theta_{dif} i = 90 - B_i$

(3)  $\theta_{Si}$

$$(4) M_i := \frac{r_0}{r_i} \cos(\theta_{skew}) + \cos(\lambda_i) + \cos(B_i)$$

$$(5) \theta_{roti} := \frac{\theta_{Si}}{M_i}$$

$$(6) \theta'_{roti} := \theta_{roti} + \underbrace{\frac{d_{beam}}{r_0} + \frac{d_{gap}}{r_0}}_{\Theta_{dead}}$$

$$(7) \xi_i := \left[ \frac{f_i}{f_{20}} \right] \frac{\sin[B_{20}]}{\sin(B_i)} H_i$$

$$(8) \text{Area}_i := \pi \left[ r_{outer}^2 + r_{inner}^2 \right] \frac{\xi_i}{\sum_{i=1}^{20} [\xi_i]} \quad i = 1, 2, \dots, 20$$

FIG. 8E

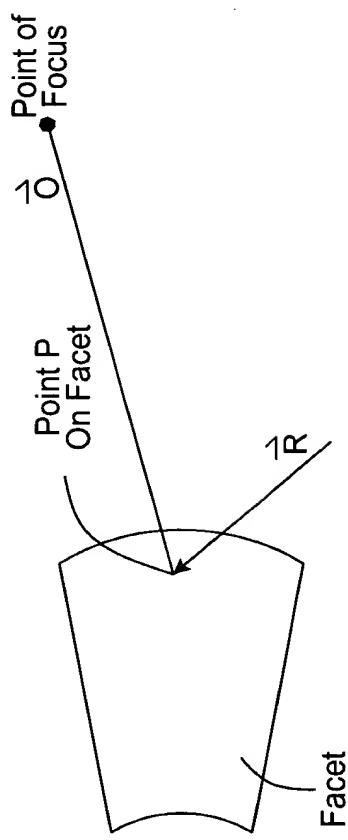
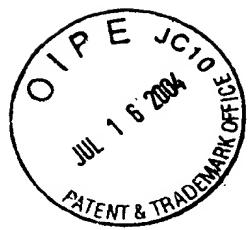


FIG. 8F1

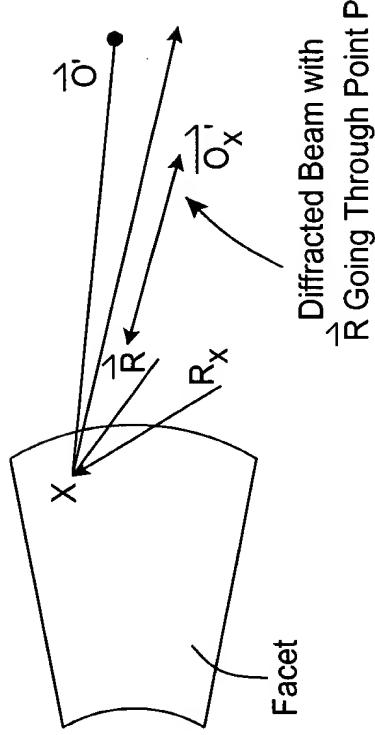


FIG. 8F2

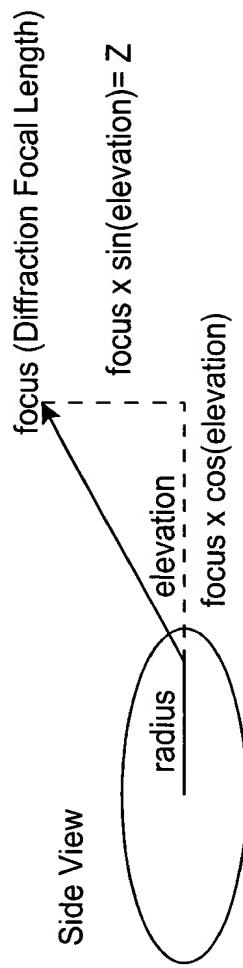
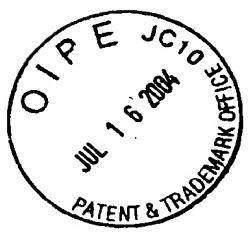
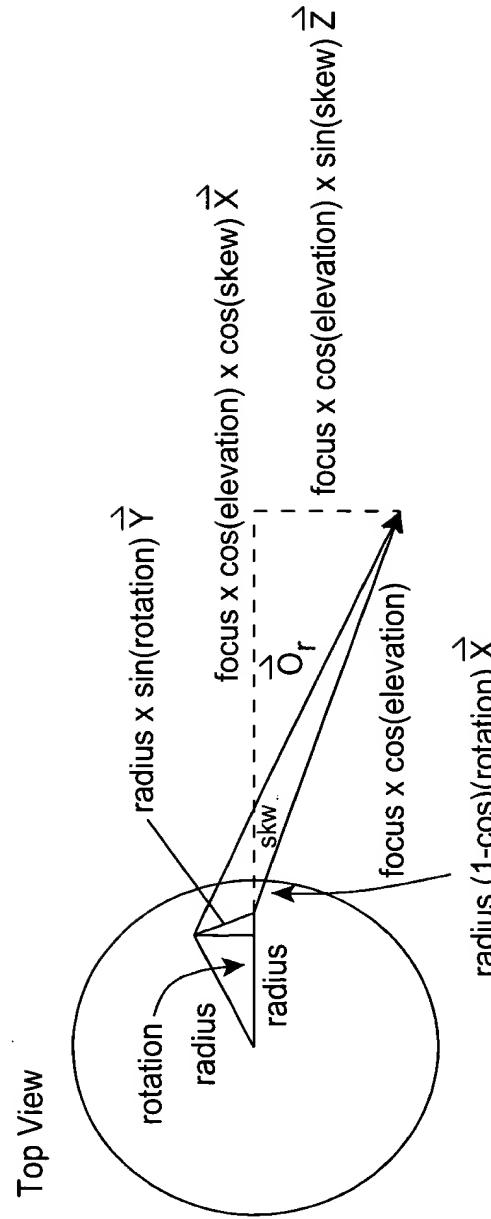
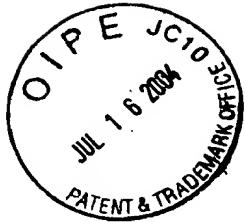


FIG. 8F3



( $\vec{O}_r$  is equal to the sum of these components)

FIG. 8F4

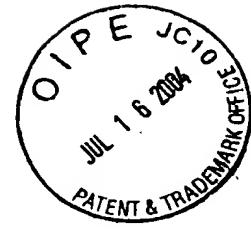


Object Ray  $\vec{O}_P$  Composition:

$$\begin{aligned}\vec{O}_P = & [\text{focus} \times \cos(\text{elevation}) \times \cos(\text{skew}) + \text{radius}(1 - \cos(\text{rotation}))]\hat{x} \\ & + [\text{focus} \times \cos(\text{elevation}) \times \sin(\text{skew}) + \text{radius} \times \sin(\text{rotation})]\hat{y} \\ & + [\text{focus} - \sin(\text{elevation})]\hat{z}\end{aligned}$$

Where  
focus = the diffraction  
elevation = elevation angle of facet  
skew = skew angle of facet  
radius = radius to point P  
rotation = start-middle-end of scan angles

FIG. 8F5



	A	B	C	D	E	F	G	H	I
788	<b>*** Optical Power at the Data Detector and Resulting Signal Levels ***</b>								
789	<b>790 Calculation of the power at the data detector for targets located at the focal planes 791 and targets located at the maximum depth of field limits for each facet.</b>								
792	Assumes average angular offset of: <b>0.7 degrees</b>								
793	(Offset of outgoing beam from center of facet)								
794									
795	Laser	Transm. of collimating lens	Refl. of first mirror	Diff. Eff. of MF plate	S - diff. eff. of holographic facet	S - refl. of second, third & fourth mirror	Trans. of Window		
796	Facet	Power (mW)							
797									
798									
799		3.36	0.46	0.95	0.85		0.97	0.8	
800	1	(This includes the truncation losses)				0.89		0.0027739	
801	2					0.89		0.0027279	
802	3					0.89		0.0026841	
803	4					0.90		0.0026424	
804	5					0.90		0.0025657	
805	6					0.90		0.0024980	
806	7					0.90		0.0024122	
807	8					0.90		0.0024122	
808	9					0.90		0.0023874	
809	10					0.90		0.0023874	
810	11					0.90		0.0023645	
811	12					0.90		0.0023645	

FIG. 9A



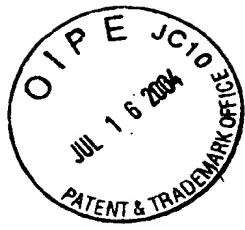
	J	K	L	M	N	O	P	Q	R	S
788										
789										
790										
791										
792	(At maximum depth of field)									
793	Targets loi (At maximum facet focus depth of field)									
794	Detector sensitivity (mV/nW):									
795	Targets loi (At maximum facet focus depth of field)									
796	Power at detector (nW)									
797	Lambertian reflectance (nW)									
798	reflectance factor									
799	0.9	0.86								
800	0.0018058									
801	0.0017176									
802	0.0017579									
803	0.0016637									
804	0.0016804									
805	0.0016002									
806	0.0016650									
807	0.0016650									
808	0.0015995									
809	0.0015995									
810	0.0016358									
811	0.0016358									

FIG. 9B



	T	U	V	W	X	Y	Z	AA
788								
789								
790								
791	6.27							
792	(Targets located at the depth of field limits)							
793								
794	Power at detector	Detector signal	Facet	Diffraction	Effective	Light	Light	
795	detector	signal	Collection	Angle from	Radius of	Collection	Collection	
796	(mW)	(Volts)	Center of	Collection	Collection	Half-	Half-	
797			Facet	Area	Area	Angle	Angle	
798			(sq. in.)	(degrees)	(inches)	(degrees)	(degrees)	
799								
800	567	3.56		2.25	52.70	0.66	3.02	2.44
801	549	3.45		1.79	50.70	0.60	2.99	2.38
802	572	3.59		2.07	48.70	0.66	2.97	2.40
803	551	3.45		1.61	46.70	0.59	2.95	2.34
804	574	3.60		1.77	42.70	0.64	2.90	2.35
805	562	3.52		1.45	38.70	0.60	2.86	2.29
806	607	3.80		1.95	32.70	0.72	2.82	2.34
807	607	3.80		1.95	32.70	0.72	2.82	2.34
808	589	3.69		1.59	30.70	0.66	2.80	2.29
809	589	3.69		1.59	30.70	0.66	2.80	2.29
810	609	3.82		1.86	28.70	0.72	2.79	2.32
811	609	3.82		1.86	28.70	0.72	2.79	2.32

FIG. 9C



### Geometrical Optics Model For Holographic (Total Out And Back) Light Diffraction Efficiency Calculations

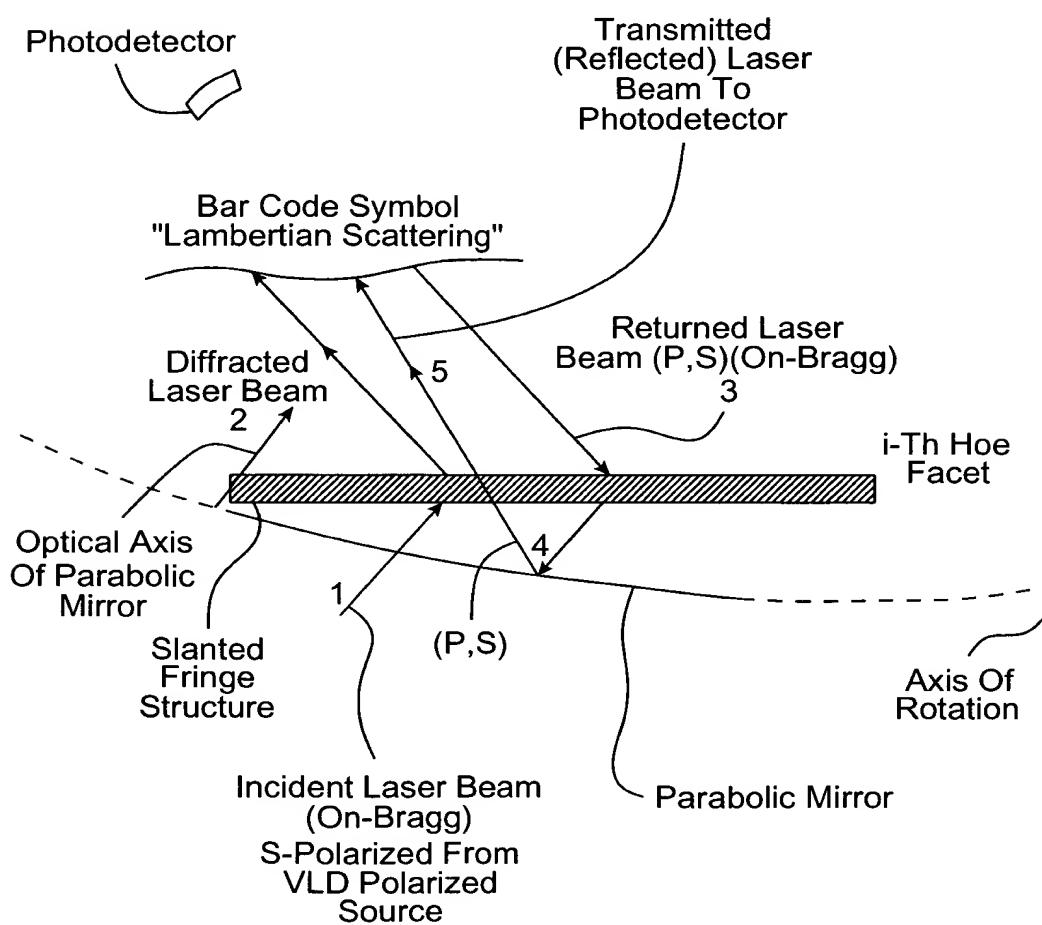


FIG. 10A1

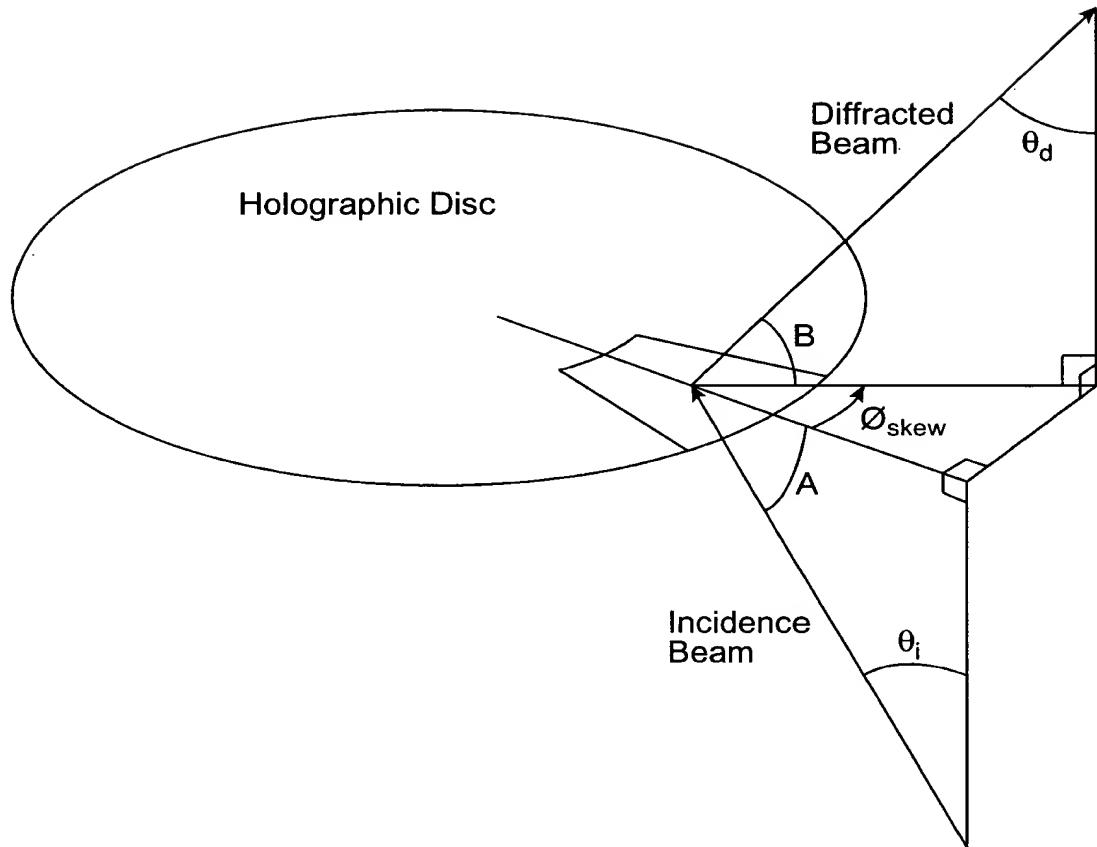
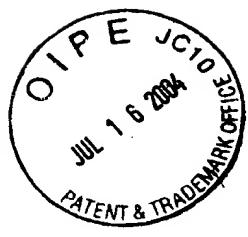


FIG. 10A2

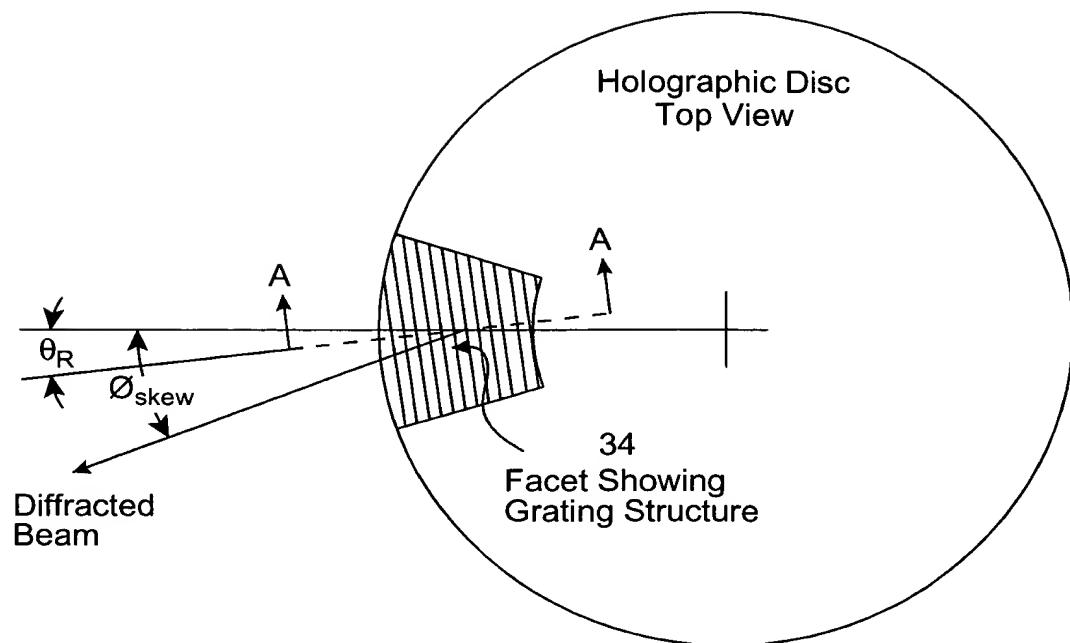
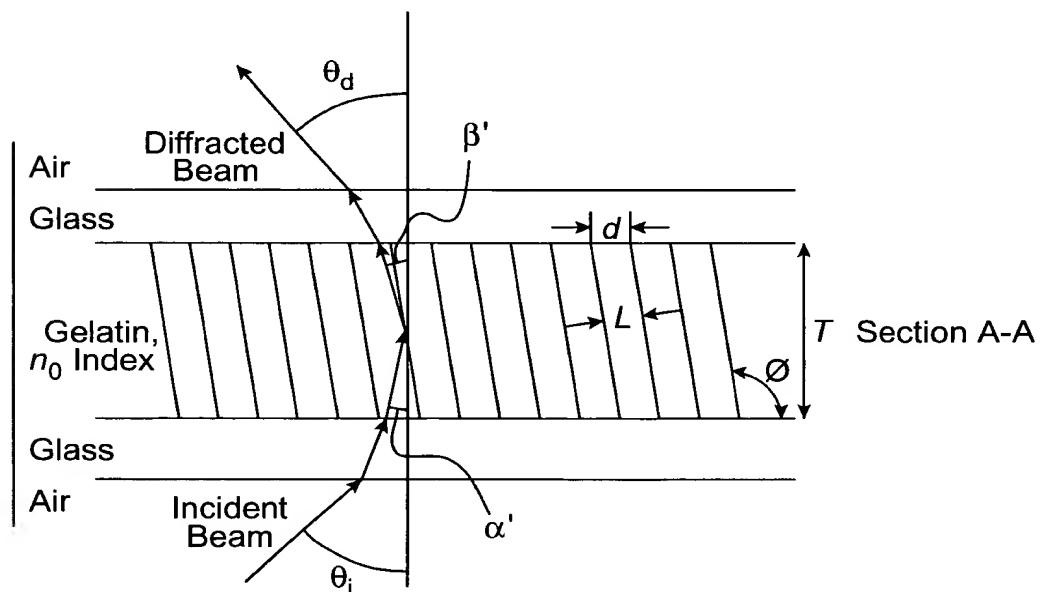
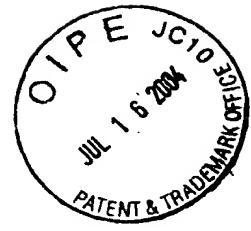


FIG. 10A3



Note: The Prime Attached To The Angles (e.g.  $\alpha'$ )  
Indicates They Are Projected Into The viewing Plane A-A

FIG. 10A4



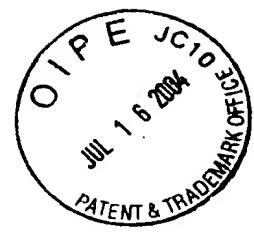
## S AND P DIFFRACTION EFFICIENCY ANALYSIS FOR THE MOST GENERAL CASE

The following analysis takes into consideration slanted fringes, skewed design, off-Bragg effects, and disc rotation effects. It is assumed that the wavelength does not deviate from the design, and that all scattering, absorption, and reflection losses are taken into account by the transmission coefficients,  $t_s$  and  $t_p$ , which are determined by measurement.

### Definitions:

- $\theta_i$  = Angle of incidence outside the HOE ( $\theta_i = 90^\circ - A$ );  
 $\alpha$  = Angle of incidence inside the HOE;  
 $\theta_d$  = Angle of diffraction outside the HOE ( $\theta_d = 90^\circ - B$ );  
 $\beta$  = Angle of diffraction inside the HOE;  
 $\phi_{skew}$  = Skew angle of the HOE;  
 $\phi$  = Tilt of Bragg planes ( $\phi = \frac{\pi}{2}$  for no tilt);  
 $\theta_R$  = Rotation angle of HOE grating ( $\theta_R = \theta_{Ro}$  when facet is centered)  
 $L$  = Separation of the Bragg planes;  
 $T$  = Thickness of the HOE medium;  
 $d$  = HOE surface fringe spacing;  
 $n_0$  = Average refractive index of HOE medium;  
 $n_1$  = Modulation (i.e. amplitude of periodic variation) of refractive index;  
 $\lambda_a$  = Laser wavelength in air;  
 $t_s$  = Transmission of S-polarization through disc considering losses;  
 $t_p$  = Transmission of P-polarization through disc considering losses.

FIG. 10B



- (1)  $\alpha = \arcsin\left(\frac{\sin \theta_i}{n_0}\right)$
- (2)  $\beta = \arcsin\left(\frac{\sin \theta_d}{n_0}\right)$
- (3)  $\phi = \arcsin\left(\frac{\cos \beta - \cos \alpha}{\sqrt{2(1 + \sin \alpha \sin \beta \cos \phi_{skew} - \cos \alpha \cos \beta)}}\right) + 90$
- (4)  $d = \sqrt{\frac{\lambda_a^2}{\sin^2 \theta_d \sin^2 \phi_{skew} + (\sin \theta_i + \sin \theta_d \cos \phi_{skew})^2}}$
- (5)  $L = d \sin \phi$
- (6)  $C_R = \cos \alpha$
- (7)  $C_S = \cos \alpha - \frac{\lambda_a}{n_0 L} \cos \phi$
- (8)  $N = \pi n_1 \frac{T}{\lambda_a \sqrt{C_R C_S}}$
- (9)  $\theta_{Ro} = \arcsin\left(\frac{d}{\lambda_a} \sin \theta_d \sin \phi_{skew}\right)$
- (10)  $\Gamma = \frac{2\pi(\sin \alpha \sin \phi \cos \theta_{Ro} + \cos \alpha \cos \phi)}{L} - \frac{\pi \lambda_a}{n_0 L^2}$
- (11)  $S = \Gamma \frac{T}{2C_S}$

FIG. 10C1



$$(12) \quad \kappa = -\sin\alpha \sin\beta \cos\phi_{skew} + \cos\alpha \cos\beta$$

$$(13) \quad E_{par} = \frac{\left( \sin(\sqrt{N^2 + S^2}) \right)^2}{1 + \frac{S^2}{N^2}}$$

$$(14) \quad E_{perp} = \frac{\left( \sin(\sqrt{(N\kappa)^2 + S^2}) \right)^2}{1 + \frac{S^2}{(N\kappa)^2}}$$

$$(15) \quad P_{par} = \frac{-\sin\phi \sin\theta_{Ro}}{\sin(\arccos(-\sin\alpha \sin\phi \cos\beta + \cos\alpha \cos\phi))}$$

$$(16) \quad P_{perp} = 1 - P_{par}$$

Diffracton efficiencies  $E_s$  and  $E_p$ , given losses  $t_s$  and  $t_p$  which are specific to each polarization and include absorption, scattering, and reflection losses from AR coatings on the outer surfaces of the disc glass.

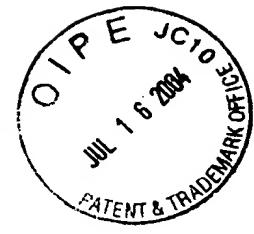
$$(17) \quad E_s = (E_{perp}P_{par} + E_{par}P_{perp})t_s$$

$$(18) \quad E_p = (E_{perp}P_{perp} + E_{par}P_{par})t_p$$

Total out-and-back efficiency is given by  $t_s$ , assuming no polarizer in front of the photodetector

$$(18) \quad T_s = E_s \frac{E_s + E_p}{2}$$

FIG. 10C2



$$(20) \quad \theta_d\{\theta_R\} = \arcsin \sqrt{\left(\frac{\lambda_a}{d}\right)^2 - 2\frac{\lambda_a}{d} \cos\theta_R \sin\theta_i + \sin^2\theta_i}$$

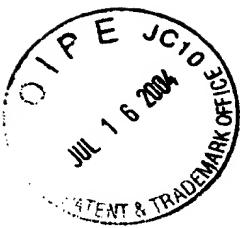
$$(21) \quad \phi_{skew}\{\theta_R\} = \arctan \left[ \frac{\sin\theta_R}{\cos\theta_R - (d/\lambda_a)\sin\theta_i} \right]$$

$$(22) \quad T_s\{\theta_{imax}\} \cos\theta_d \Big|_{\theta_R = \theta_{Ro} - \frac{1}{2}\theta_{ROTi}} = T_s\{\theta_{imax}\} \cos\theta_d \Big|_{\theta_R = \theta_{Ro} - \frac{1}{2}\theta_{ROTi}}$$

The design efficiency of the  $i$ -th facet is given by evaluating  $T_s$  at the design incidence angle,  $\theta_i$ , the design rotation angle,  $\theta_{Ro}$ , and the index modulation that maximizes the efficiency,  $n_{1max}$ , given the true maximum efficiency incidence angle,  $\theta_{imax}$ , that results from equation (22). The relative efficiency,  $H_i$ , is then given by dividing the total efficiency of the first facet by that of the  $i$ -th facet.

$$(23) \quad H_i = \frac{T_{s1}}{T_{si}\{\theta_i, \theta_{imax}, \theta_{Ro}, n_{1max}\}}$$

FIG. 10C3



## Diffraction Efficiency Variation with Disc Rotation

### Facet 1: before optimization

Fixed design parameters:

$$\theta_i = 38^\circ \quad \theta_d = 52^\circ \quad \phi_{skew} = 0^\circ \quad \lambda_a = 650 \text{ nm}$$

DCG parameters:

$$T = 2.5 \text{ microns} \quad n_0 = 1.40 \quad n_1 = 0.121$$

Relative signal is equal to  $T_s \cos \theta_d$ . Note that the relative signal falls off as the rotation angle goes away from zero. This is for a maximum efficiency incidence angle,  $\theta_{i\max}$ , equal to  $\theta_i$  ( $38^\circ$ ). This indicates a non-optimum configuration.

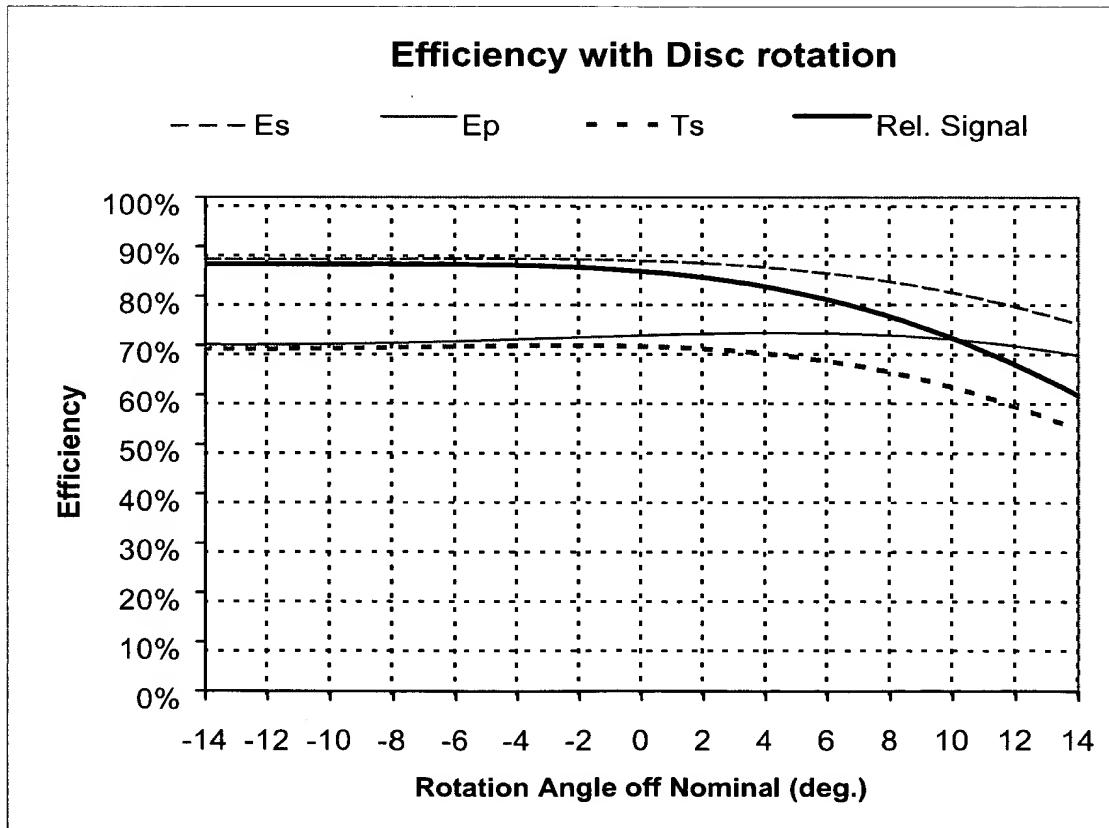
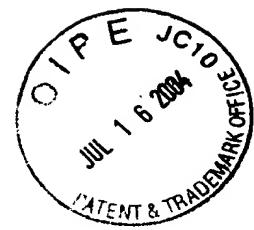


FIG. 10D1



## Diffraction Efficiency Variation with Disc Rotation

### Facet 1: after optimization

Fixed design parameters:

$$\theta_i = 38^\circ \quad \theta_d = 52^\circ \quad \phi_{skew} = 0^\circ \quad \lambda_a = 650 \text{ nm}$$

DCG parameters:

$$T = 2.5 \text{ microns} \quad n_0 = 1.40 \quad n_1 = 0.121$$

Relative signal is equal to  $T_s \cos \theta_d$ . Note that the relative signal at a rotation angle of  $+/-13^\circ$  is equal to the relative signal at  $0^\circ$ . This is achieved when the maximum efficiency incidence angle,  $\theta_{i\max}$ , is  $36.3^\circ$ .

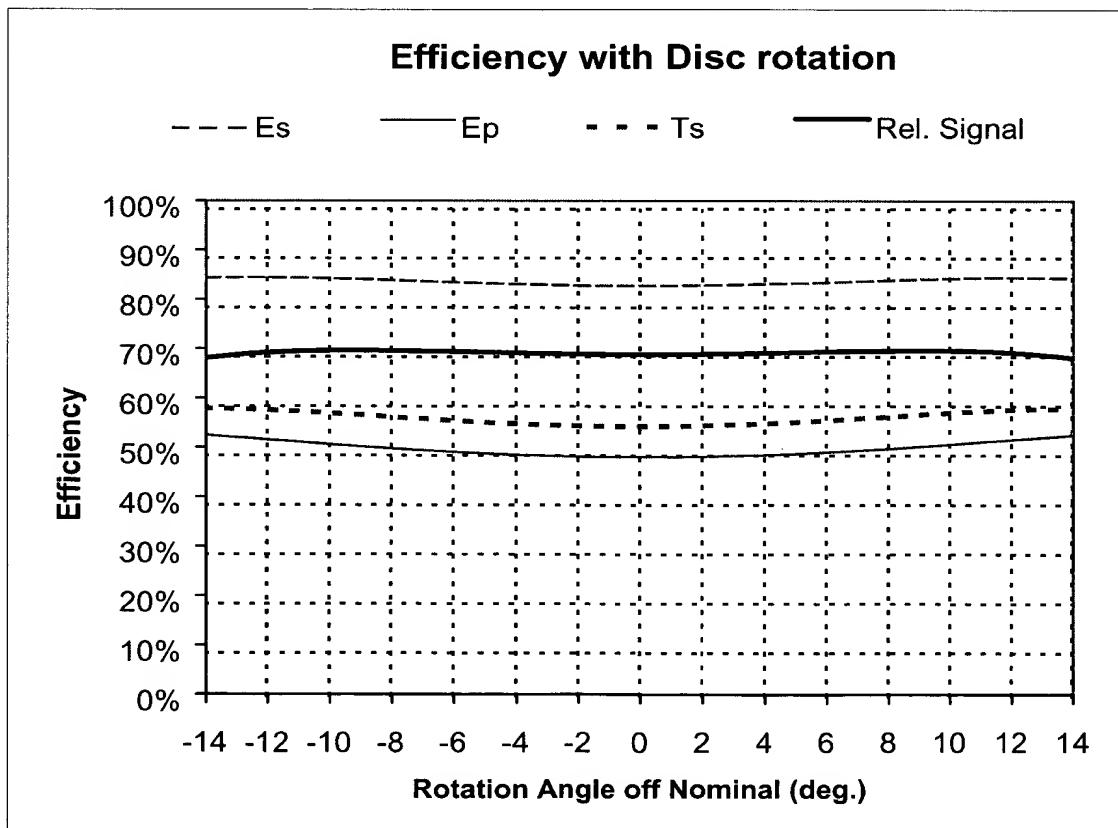
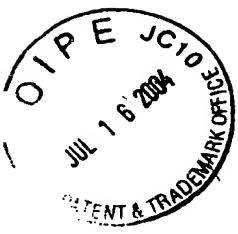


FIG. 10D2



## Diffraction Efficiency Variation with Disc Rotation

### Facet 7: before optimization

Fixed design parameters:

$$\theta_i = 38^\circ \quad \theta_d = 32^\circ \quad \phi_{skew} = 28^\circ \quad \lambda_a = 650 \text{ nm}$$

DCG parameters:

$$T = 2.5 \text{ microns} \quad n_0 = 1.40 \quad n_1 = 0.121$$

Relative signal is equal to  $T_s \cos \theta_d$ . Note that the relative signal falls off as the rotation angle goes from negative to positive. This is for a maximum efficiency incidence angle,  $\theta_{i\max}$ , equal to  $\theta_i$  ( $38^\circ$ ). This indicates a non-optimum configuration.

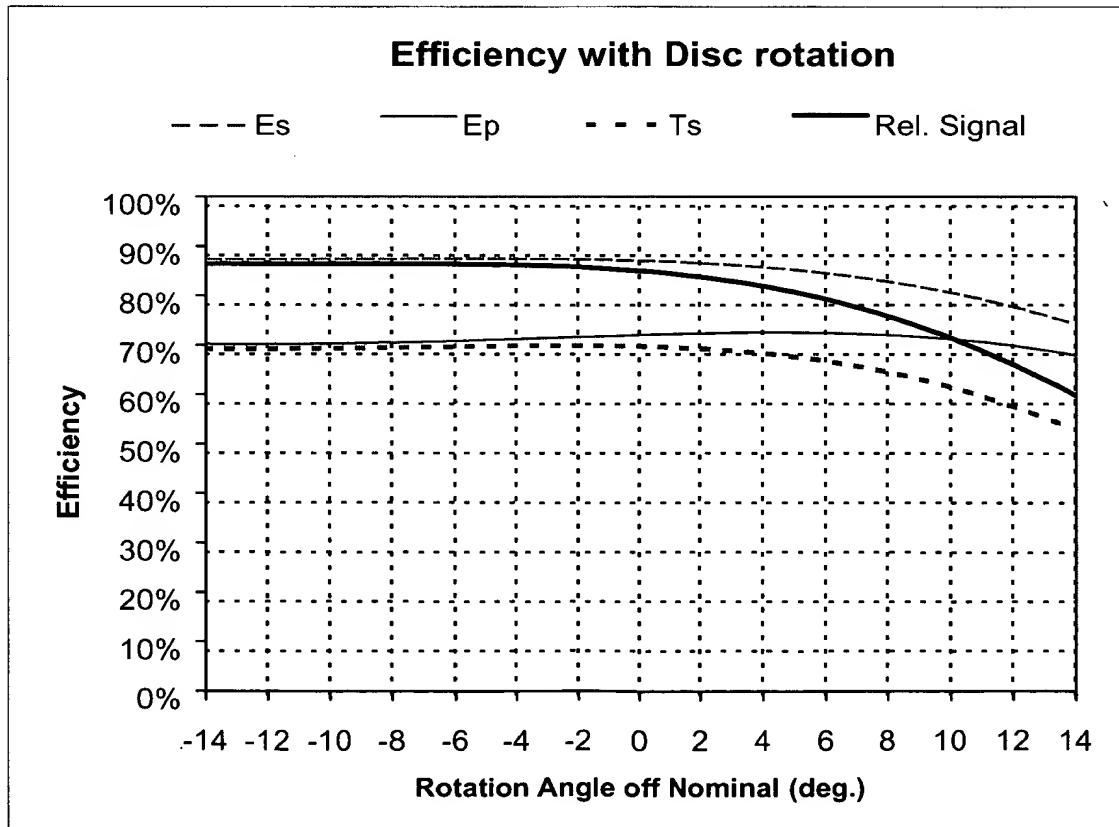


FIG. 10E1



## Diffraction Efficiency Variation with Disc Rotation

### Facet 7: after optimization

Fixed design parameters:

$$\theta_i = 38^\circ \quad \theta_d = 32^\circ \quad \phi_{skew} = 28^\circ \quad \lambda_a = 650 \text{ nm}$$

DCG parameters:

$$T = 2.5 \text{ microns} \quad n_0 = 1.40 \quad n_1 = 0.121$$

Relative signal is equal to  $T_s \cos \theta_d$ . Note that the relative signal at a rotation angle of  $-14^\circ$  is equal to the relative signal at  $+14^\circ$ . This is achieved when the maximum efficiency incidence angle,  $\theta_{i\max}$ , is  $35.8^\circ$ .

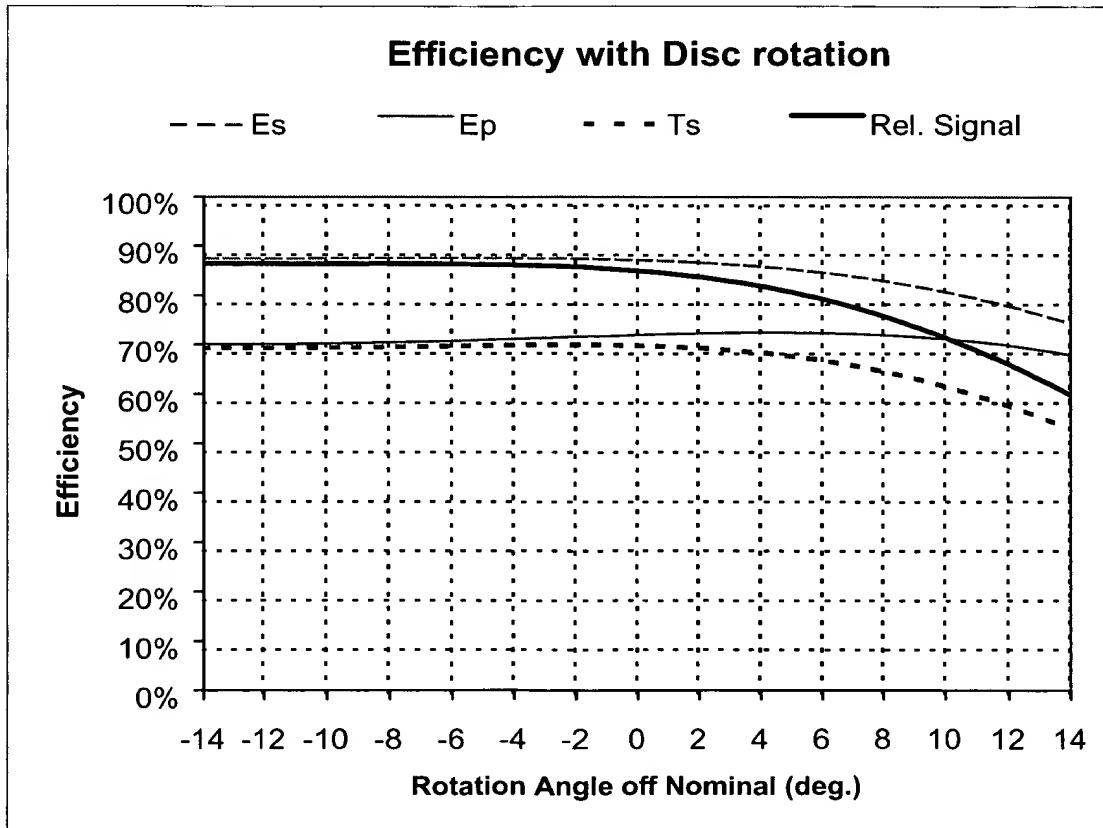


FIG. 10E2

## S and P Diffraction Efficiency Calculations

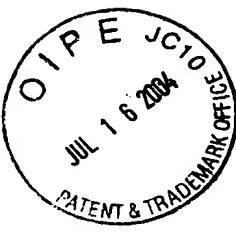
It is assumed that there is no deviation from the nominal wavelength.

### Facet-independent design parameters:

Design wavelength:	650 nm
External incidence angle:	38 deg
Internal incidence angle:	26.09 deg
Geelatin effective thickness:	2.5 microns
Average bulk refractive index:	1.4
Refractive index modulation:	0.121
S-polarization losses:	10%
P-polarization losses:	10%
degrees to radians conversion:	0.017453

Facet	$\theta_d$ (deg.)	$\beta$ (deg.)	$\phi_{skew}$ (deg.)	$d$ (nm)	$\theta_{Ro}$ (deg.)	$\theta_{i,max}$ (deg.)	$\alpha_{max}$ (deg.)	$\beta_{max}$ (deg.)	$\phi_{s,max}$ (deg.)	$\phi$ (deg.)	$L$ (nm)	$\theta_{ROT}$ (deg.)
1	52.00	34.25	0	463.1	0.00	36.30	25.02	35.43	0.00	84.79	461.2	26.24
2	50.00	33.17	0	470.4	0.00	36.30	25.02	34.34	0.00	85.34	468.9	28.35
3	48.00	32.06	0	478.4	0.00	36.30	25.02	33.21	0.00	85.90	477.1	26.66
4	46.00	30.92	0	486.9	0.00	36.30	25.02	32.05	0.00	86.48	486.0	29.19
5	42.00	28.55	0	505.9	0.00	36.30	25.02	29.66	0.00	87.68	505.5	27.97
6	38.00	26.09	0	527.9	0.00	36.30	25.02	27.17	0.00	88.92	527.8	30.28
7	32.00	22.24	28	584.7	12.93	35.80	24.70	23.45	26.52	90.64	584.6	27.99
8	32.00	22.24	-28	584.7	-12.93	35.80	24.70	23.45	-26.52	90.64	584.6	27.99
9	30.00	20.92	28	600.2	12.52	35.56	24.55	22.26	26.27	91.17	600.1	30.65
10	30.00	20.92	-28	600.2	-12.52	35.56	24.55	22.26	-26.27	91.17	600.1	30.65
11	28.00	19.59	28	617.0	12.08	35.72	24.65	20.83	26.28	91.96	616.6	29.19
12	28.00	19.59	-28	617.0	-12.08	35.72	24.65	20.83	-26.28	91.96	616.6	29.19

FIG. 10F1

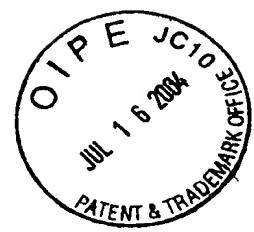




0.898

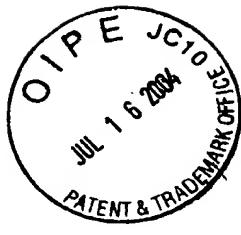
$C_s$	N	$\beta$				$\phi_{skew}$				$\Gamma$				S			
		$-\frac{1}{2}\theta_{ROT}$	$\theta_d$	$+\frac{1}{2}\theta_{ROT}$	$-\frac{1}{2}\theta_{ROT}$	$+\frac{1}{2}\theta_{ROT}$	$-\frac{1}{2}\theta_{ROT}$	$+\frac{1}{2}\theta_{ROT}$	$-\frac{1}{2}\theta_{ROT}$	$\theta_{Ro}$	$-\frac{1}{2}\theta_{ROT}$	$+\frac{1}{2}\theta_{ROT}$	$\theta_{Ro}$	$-\frac{1}{2}\theta_{ROT}$	$+\frac{1}{2}\theta_{ROT}$	$\theta_{Ro}$	
0.807	1.718	54.70	54.70	35.66	35.66	-22.98	22.98	0.0634	0.2192	0.0634	0.0982	0.3397	0.0982	0.3397	0.0982	0.3397	
0.818	1.706	53.05	53.05	34.81	34.81	-25.05	25.05	0.0380	0.2168	0.0380	0.0581	0.3315	0.0581	0.3315	0.0581	0.3315	
0.829	1.695	50.61	50.61	33.51	33.51	-23.91	23.91	0.0586	0.2143	0.0586	0.0885	0.3232	0.0885	0.3232	0.0885	0.3232	
0.839	1.684	49.05	49.05	32.65	32.65	-26.45	26.45	0.0285	0.2116	0.0285	0.0424	0.3150	0.0424	0.3150	0.0424	0.3150	
0.861	1.663	44.69	44.69	30.16	30.16	-26.20	26.20	0.0438	0.2057	0.0438	0.0636	0.2987	0.0636	0.2987	0.0636	0.2987	
0.882	1.643	41.07	41.07	27.99	27.99	-29.30	29.30	0.0176	0.1992	0.0176	0.0250	0.2825	0.0250	0.2825	0.0250	0.2825	
0.907	1.620	29.76	38.91	20.76	26.66	-2.39	53.28	0.3498	0.2307	-0.1618	0.4820	0.3180	-0.2230	0.3180	-0.2230	0.3180	
0.907	1.620	38.91	29.76	26.66	20.76	-53.28	2.39	-0.1618	0.2307	0.3498	-0.2230	0.3180	0.4820	0.3180	0.4820	0.3180	
0.914	1.614	27.96	37.62	19.57	25.85	-6.49	55.95	0.3549	0.2510	-0.1726	0.4854	0.3432	-0.2360	0.3432	-0.2360	0.3432	
0.914	1.614	37.62	27.96	25.85	19.57	-55.95	6.49	-0.1726	0.2510	0.3549	-0.2360	0.3432	0.4854	0.3432	0.4854	0.3432	
0.924	1.605	26.06	35.04	18.29	24.21	-6.05	55.44	0.3252	0.2304	-0.1470	0.4400	0.3118	-0.1988	0.3118	-0.1988	0.3118	
0.924	1.605	35.04	26.06	24.21	18.29	-55.44	6.05	-0.1470	0.2304	0.3252	-0.2304	0.3118	0.4400	0.3118	0.4400	0.3118	

FIG. 10F2



$\kappa_{\theta_{ROT}}$	$\theta_{Ro}$	$+1/2\theta_{ROT}$	$-1/2\theta_{ROT}$	$E_{par}_{\theta_{Ro}}$	$+1/2\theta_{ROT}$	$E_{perp}_{\theta_{Ro}}$	$-1/2\theta_{ROT}$	$P_{par}_{\theta_{Ro}}$	$+1/2\theta_{ROT}$	$P_{perp}_{\theta_{Ro}}$	$+1/2\theta_{ROT}$
.5028	0.4948	0.5028	0.9746	0.9315	0.9746	0.5759	0.5419	0.0580	0.0000	0.0580	0.9420
.5187	0.5111	0.5187	0.9804	0.9369	0.9804	0.5983	0.5639	0.0680	0.0000	0.0680	0.9320
.5354	0.5277	0.5354	0.9814	0.9420	0.9814	0.6192	0.5860	0.0609	0.0000	0.0609	0.9391
.5519	0.5445	0.5519	0.9865	0.9468	0.9865	0.6416	0.6082	0.0733	0.0000	0.0733	0.9267
.5860	0.5787	0.5860	0.9899	0.9552	0.9899	0.6634	0.6521	0.0688	0.0000	0.0688	0.9312
.6200	0.6132	0.6200	0.9945	0.9623	0.9945	0.7248	0.6947	0.0818	0.0000	0.0818	0.9182
.6918	0.6843	0.6906	0.9056	0.9567	0.9773	0.7442	0.7720	0.7946	0.0004	0.0620	0.2446
.6906	0.6843	0.6918	0.9773	0.9567	0.9056	0.7946	0.7720	0.7442	0.2446	0.0620	0.0004
.7080	0.7002	0.7068	0.9051	0.9508	0.9755	0.7584	0.7833	0.8093	0.0030	0.0587	0.2614
.7068	0.7002	0.7080	0.9755	0.9508	0.9051	0.8093	0.7833	0.7584	0.2614	0.0587	0.0030
.7227	0.7159	0.7221	0.9220	0.9597	0.9828	0.7823	0.8032	0.8276	0.0025	0.0555	0.2452
.7221	0.7159	0.7227	0.9828	0.9597	0.9220	0.8276	0.8032	0.7823	0.2452	0.0555	0.0025

FIG. 10F3



$E_s$ $\theta_{Ro}$	$E_p$			$T_s$			$H_i$	Solver (=0)
	$-\frac{1}{2}\theta_{ROT}$	$+\frac{1}{2}\theta_{ROT}$	$-\frac{1}{2}\theta_{ROT}$	$+\frac{1}{2}\theta_{ROT}$	$-\frac{1}{2}\theta_{ROT}$	$\theta_{Ro}$	$+^1\frac{1}{2}\theta_{ROT}$	
85.6%	83.8%	85.6%	53.9%	48.8%	53.9%	59.7%	55.6%	1.000
85.9%	84.3%	85.9%	56.2%	50.8%	56.2%	61.0%	57.0%	0.976
86.3%	84.8%	86.3%	57.7%	52.7%	57.7%	62.2%	58.3%	0.953
86.5%	85.2%	86.5%	60.0%	54.7%	60.0%	63.4%	59.6%	0.932
87.2%	86.0%	87.2%	63.4%	58.7%	63.4%	65.7%	62.2%	0.894
87.5%	86.6%	87.5%	67.2%	62.5%	67.2%	67.7%	64.6%	0.861
81.5%	85.1%	83.9%	67.0%	70.5%	75.5%	60.5%	66.2%	0.840
83.9%	85.1%	81.5%	75.5%	70.5%	67.0%	66.9%	66.9%	0.020396813
81.4%	84.7%	83.9%	68.3%	71.4%	76.7%	60.9%	66.1%	0.841
83.9%	84.7%	81.4%	76.7%	71.4%	68.3%	67.4%	66.1%	0.02187036
82.9%	85.6%	85.0%	70.4%	73.1%	77.9%	63.6%	67.9%	0.841
85.0%	85.6%	82.9%	77.9%	73.1%	70.4%	69.3%	67.9%	0.019325482
								0.019325482
								0.819
								0.819
								0.255193744

FIG. 10F4

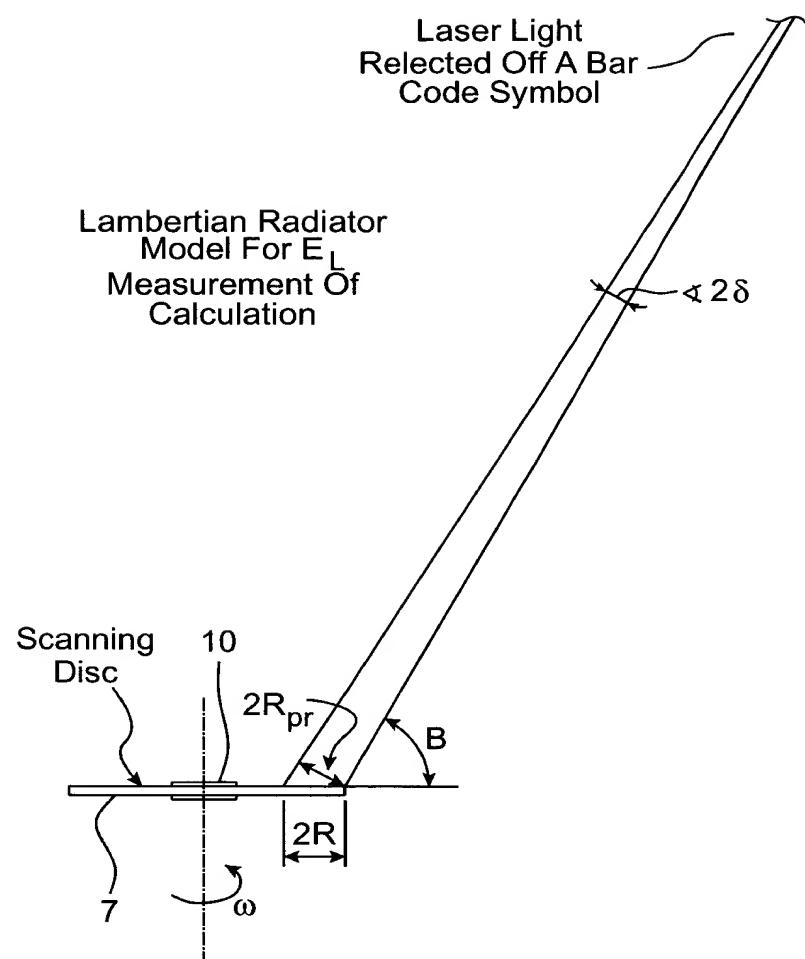
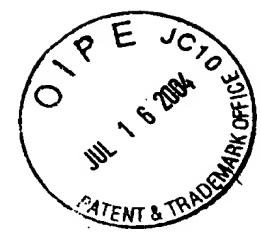
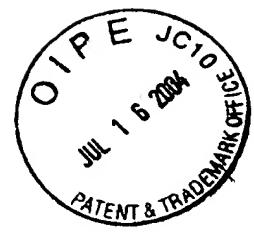


FIG. 10G1



## FACET LIGHT COLLECTION EFFICIENCY

- Z = DISTANCE FROM SCAN POINT ON LABEL ( MAX = FOCAL)  
LENGTH PLUS 5 INCHES
- Area = AREA OF CORRESPONDING FACET
- R = RADIUS OF EFFECTIVE CIRCULAR APERTURE
- R.pr = RADIUS OF PROJECTED EFFECTIVE CIRCULAR APERTURE
- B = ANGLE BETWEEN OUTGOING BEAM AND THE DISC
- $\delta$  = HALF-ANGLE SUBTENDED BY EFFECTIVE PROJECTED  
CIRCULAR APERTURE
- E.L. = LAMBERTIAN LIGHT COLLECTION EFFICIENCY

FIG. 10G2

$$R_{pr} := \sqrt{\frac{\text{Area} \sin B}{\pi}} \quad \delta := \tan^{-1}\left[\frac{R_{pr}}{Z}\right]$$

$$E_L := (\sin(\delta))^2$$

FIG. 10G3

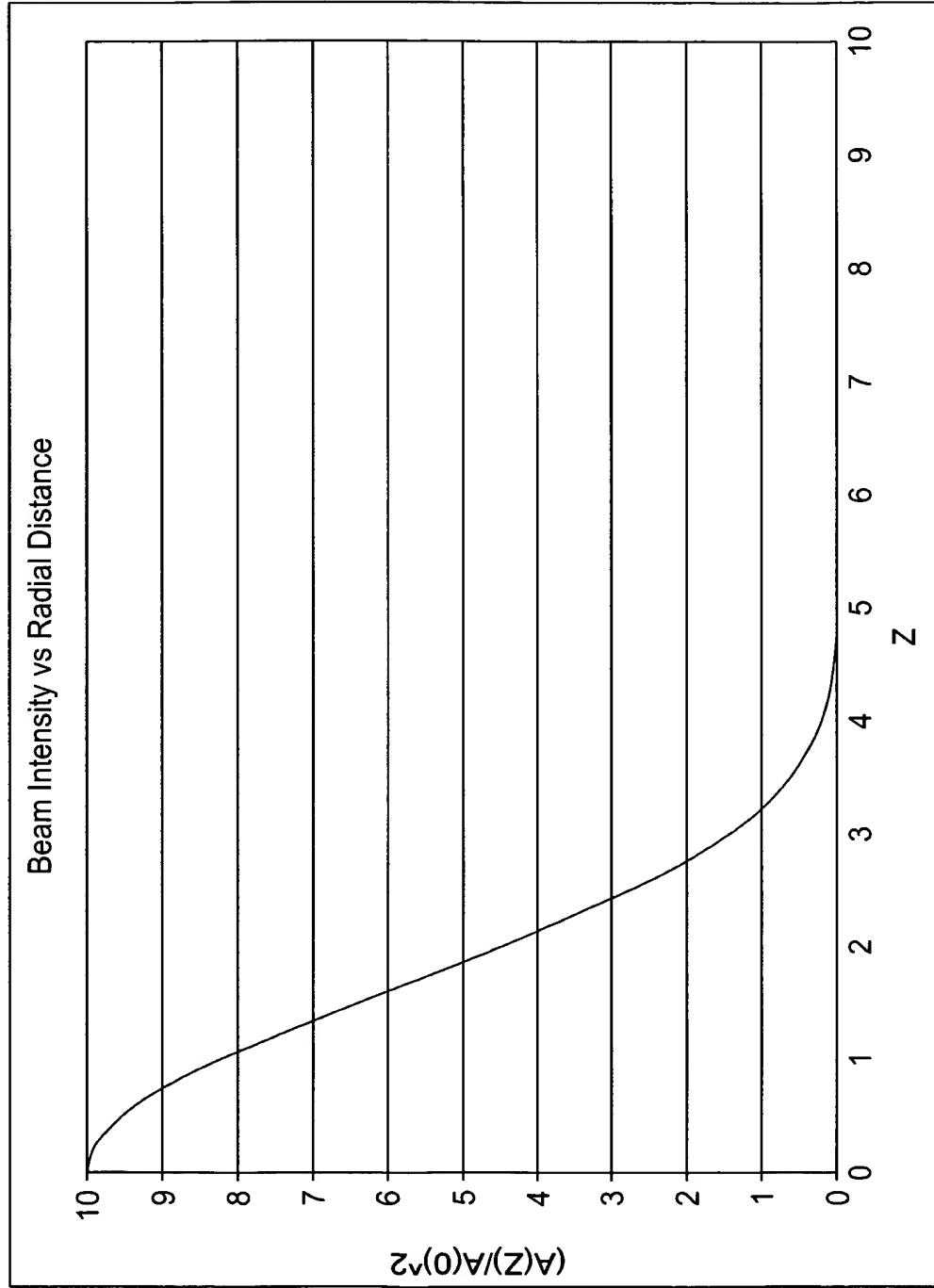
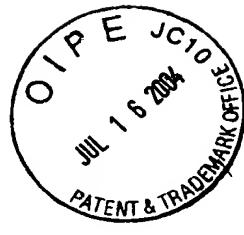
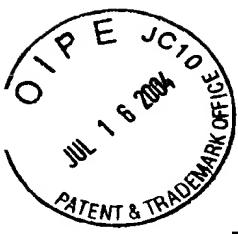
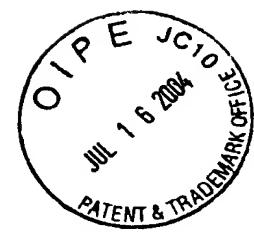


FIG. 11A2



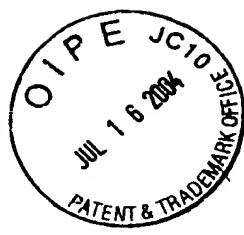
	A	B	C	D	E	F	G	H	I	J	K	L
1	Gaussian beam analysis for a multi-focal-plane scanner	GausStratos_4.xls										
2	3 Beam diameter as a function of the distance from the focusing holographic facet											
4												
5												
6	Wavelength (nm):	650	(Linked from Disk spreadsheet)									
7												
8	Beam diameter											
9	at the facet (mm):	1.31	(Linked from Trunc spreadsheet)									
10												
11	P2:	0.505384	60% Resolution criterion (% of peak intensity)									
12	(P2 is the ratio of the	60%	intensity diameter to the 1/e-squared diameter)									
13												
14	Rayleigh range (in.):	82										
15												
16	Total number of focal planes:	4	<--- Do not enter a value here. Entered automatically.									
17	(See note at cell A196)		Enter values in the row below.									
18	Focal plane:	1	2	3	4							
19												
20	Waist location (Zmin):	11.5	13.5	15.6	17.7							
21	(inches) Rot. Angle:	26.24		Volts==>	5.42	9.3 <==Overall DOF						
22	Geom. focal length:	11.7	13.9	16.2	18.6							
23	(inches)											
24	Total facet angular sweep (degrees):		358.14	(Linked from Disk spreadsheet)								
25	Beam diameter	7.40	8.76	10.22	11.74							
26	at focal point (mils)											
27	(1/e-squared)											
28												
29	Required resolution (mils)		7.5									
30	(Minimum bar width - X)											
31												
32	Distance from disk		Half power beam diameters (in mils) for each scan line									
33	(inches)		1	2	3	4						
34												
35												

FIG. 11B1A



	M	N	O	P	Q	R	S	T	U	V	W	X
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												

FIG. 11B1B



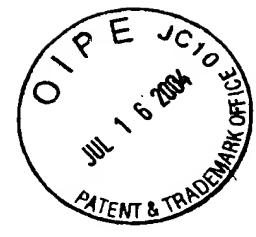
	A	B	C	D	E	F	G	H	I	J	K	L
36	8		8.70	11.36	13.47	15.11						
37	8.1		8.49	11.19	13.32	14.98						
38	8.2		8.29	11.01	13.17	14.84						
39	8.3		8.09	10.84	13.02	14.71						
40	8.4		7.89	10.66	12.87	14.58						
41	8.5		7.69	10.49	12.71	14.45						
42	8.6		7.50	10.31	12.56	14.31						
43	8.7		7.30	10.14	12.41	14.18						
44	8.8		7.11	9.97	12.26	14.05						
45	8.9		6.92	9.80	12.11	13.92						
46	9		6.73	9.63	11.97	13.79						
47	9.1		6.54	9.46	11.82	13.66						
48	9.2		6.36	9.29	11.67	13.53						
49	9.3		6.18	9.12	11.52	13.40						
50	9.4		6.00	8.96	11.37	13.27						
51	9.5		5.82	8.79	11.23	13.14						
52	9.6		5.65	8.62	11.08	13.01						
53	9.7		5.48	8.46	10.93	12.88						
54	9.8		5.32	8.30	10.79	12.75						
55	9.9		5.16	8.14	10.64	12.63						
56	10		5.01	7.98	10.50	12.50						
57	10.1		4.86	7.82	10.36	12.37						
58	10.2		4.72	7.66	10.21	12.24						
59	10.3		4.58	7.50	10.07	12.12						
60	10.4		4.45	7.35	9.93	11.99						
61	10.5		4.33	7.20	9.79	11.87						
62	10.6		4.22	7.05	9.65	11.74						
63	10.7		4.12	6.90	9.51	11.61						
64	10.8		4.02	6.75	9.37	11.49						
65	10.9		3.94	6.61	9.23	11.37						
66	11		3.87	6.46	9.10	11.24						
67	11.1		3.81	6.32	8.96	11.12						
68	11.2		3.76	6.19	8.83	11.00						
69	11.3		3.73	6.05	8.69	10.87						
70	11.4		3.71	5.92	8.56	10.75						

FIG. 11B1C



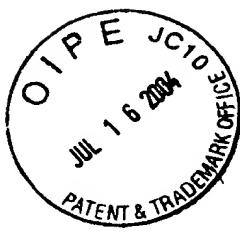
M	N	O	P	Q	R	S	T	U	V	W	X
36	221	289	342	384 #VALUE!		9.22	234				
37	216	284	338	380 #VALUE!		9.02	229				
38	211	280	334	377 #VALUE!		8.83	224				
39	206	275	331	374 #VALUE!		8.63	219				
40	200	271	327	370 #VALUE!		8.44	214				
41	195	266	323	367 #VALUE!		8.24	209				
42	190	262	319	364 #VALUE!		8.05	204				
43	185	258	315	360 #VALUE!		7.86	200				
44	181	253	312	357 #VALUE!		7.67	195				
45	176	249	308	354 #VALUE!		7.48	190				
46	171	245	304	350 #VALUE!		7.29	185				
47	166	240	300	347 #VALUE!		7.11	181				
48	162	236	296	344 #VALUE!		6.92	176				
49	157	232	293	340 #VALUE!		6.74	171				
50	152	227	289	337 #VALUE!		6.57	167				
51	148	223	285	334 #VALUE!		6.39	162		200	200	
52	144	219	281	330 #VALUE!		6.22	158				
53	139	215	278	327 #VALUE!		6.05	154				
54	135	211	274	324 #VALUE!		5.88	149				
55	131	207	270	321 #VALUE!		5.71	145				
56	127	203	267	317 #VALUE!		5.55	141				
57	123	199	263	314 #VALUE!		5.40	137				
58	120	195	259	311 #VALUE!		5.25	133				
59	116	191	256	308 #VALUE!		5.10	129				
60	113	187	252	305 #VALUE!		4.96	126				
61	110	183	249	301 #VALUE!		4.82	122				
62	107	179	245	298 #VALUE!		4.69	119				
63	105	175	242	295 #VALUE!		4.57	116				
64	102	171	238	292 #VALUE!		4.45	113				
65	100	168	235	289 #VALUE!		4.34	110				
66	98	164	231	286 #VALUE!		4.24	108		185	144	
67	97	161	228	282 #VALUE!		4.15	105				
68	96	157	224	279 #VALUE!		4.07	103				
69	95	154	221	276 #VALUE!		4.00	102				

FIG. 11B1D



	A	B	C	D	E	F	G	H	I	J	K
70	11.4		3.71	5.92	8.56	10.75					
71	11.5		3.70	5.80	8.43	10.63					
72	11.6		3.71	5.67	8.30	10.51					
73	11.7		3.73	5.55	8.17	10.39					
74	11.8		3.76	5.44	8.04	10.27					
75	11.9		3.81	5.32	7.91	10.15					
76	12		3.87	5.22	7.79	10.04					
77	12.1		3.94	5.12	7.66	9.92					
78	12.2		4.02	5.02	7.54	9.80					
79	12.3		4.12	4.93	7.42	9.69					
80	12.4		4.22	4.84	7.30	9.57					
81	12.5		4.33	4.76	7.18	9.46					
82	12.6		4.45	4.69	7.07	9.34					
83	12.7		4.58	4.62	6.95	9.23					
84	12.8		4.72	4.56	6.84	9.12					
85	12.9		4.86	4.51	6.73	9.01					
86	13		5.01	4.47	6.63	8.90					
87	13.1		5.16	4.43	6.52	8.79					
88	13.2		5.32	4.40	6.42	8.68					
89	13.3		5.48	4.38	6.32	8.58					
90	13.4		5.65	4.37	6.22	8.47					
91	13.5		5.82	4.36	6.13	8.36					
92	13.6		6.00	4.37	6.04	8.26					
93	13.7		6.18	4.38	5.95	8.16					
94	13.8		6.36	4.40	5.87	8.06					
95	13.9		6.54	4.43	5.79	7.96					
96	14		6.73	4.47	5.71	7.86					
97	14.1		6.92	4.51	5.63	7.76					
98	14.2		7.11	4.56	5.56	7.67					
99	14.3		7.30	4.62	5.50	7.58					
100	14.4		7.50	4.69	5.44	7.48					

FIG. 11B1E



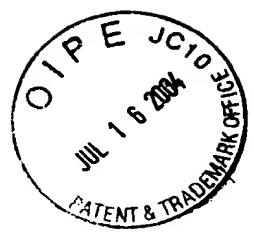
L	M	N	O	P	Q	R	S	T	U	V	W	X
70	94	150	217	273	#VALUE!		3.94	100				
71	94	147	214	270	#VALUE!		3.89	99				
72	94	144	211	267	#VALUE!		3.86	98				
73	95	141	207	264	#VALUE!		3.83	97				
74	96	138	204	261	#VALUE!		3.82	97				
75	97	135	201	258	#VALUE!		3.82	97				
76	98	133	198	255	#VALUE!		3.83	97			185	143
77	100	130	195	252	#VALUE!		3.86	98				
78	102	127	192	249	#VALUE!		3.89	99				
79	105	125	188	246	#VALUE!		3.94	100				
80	107	123	185	243	#VALUE!		4.00	102				
81	110	121	182	240	#VALUE!		4.07	103				
82	113	119	180	237	#VALUE!		4.15	105				
83	116	117	177	234	#VALUE!		4.24	108				
84	120	116	174	232	#VALUE!		4.34	110				
85	123	115	171	229	#VALUE!		4.45	113				
86	127	113	168	226	#VALUE!		4.57	116			194	149
87	131	113	166	223	#VALUE!		4.69	119				
88	135	112	163	221	#VALUE!		4.82	122				
89	139	111	161	218	#VALUE!		4.96	126				
90	144	111	158	215	#VALUE!		5.10	129				
91	148	111	156	212	#VALUE!		5.25	133				
92	152	111	153	210	#VALUE!		5.40	137				
93	157	111	151	207	#VALUE!		5.55	141				
94	162	112	149	205	#VALUE!		5.71	145				
95	166	113	147	202	#VALUE!		5.88	149				
96	171	113	145	200	#VALUE!		6.05	154			200	162
97	176	115	143	197	#VALUE!		6.22	158				
98	181	116	141	195	#VALUE!		6.39	162				
99	185	117	140	192	#VALUE!		6.57	167				
100	190	119	138	190	#VALUE!		6.74	171				

FIG. 11B1F



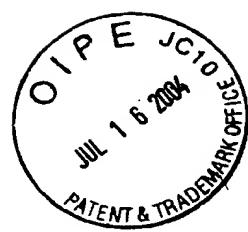
	A	B	C	D	E	F	G	H	I	J	K	L
101	14.5		7.69	4.76	5.38	7.39						
102	14.6		7.89	4.84	5.33	7.30						
103	14.7		8.09	4.93	5.28	7.22						
104	14.8		8.29	5.02	5.23	7.13						
105	14.9		8.49	5.12	5.20	7.05						
106	15		8.70	5.22	5.16	6.97						
107	15.1		8.90	5.32	5.13	6.89						
108	15.2		9.10	5.44	5.11	6.81						
109	15.3		9.31	5.55	5.09	6.74						
110	15.4		9.52	5.67	5.08	6.66						
111	15.5		9.72	5.80	5.07	6.59						
112	15.6		9.93	5.92	5.07	6.53						
113	15.7		10.14	6.05	5.07	6.46						
114	15.8		10.35	6.19	5.08	6.40						

FIG. 11B1G



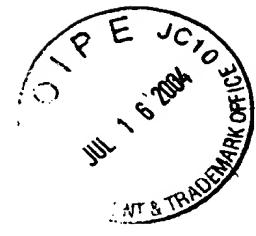
	M	N	O	P	Q	R	S	T	U	V	W	X
101	195	121	137	188	#VALUE!		6.92	176				
102	200	123	135	186	#VALUE!		7.11	181				
103	206	125	134	183	#VALUE!		7.29	185				
104	211	127	133	181	#VALUE!		7.48	190				
105	216	130	132	179	#VALUE!		7.67	195				
106	221	133	131	177	#VALUE!		7.86	200		178		
107	226	135	130	175	#VALUE!		8.05	204				
108	231	138	130	173	#VALUE!		8.24	209				
109	236	141	129	171	#VALUE!		8.44	214				
110	242	144	129	169	#VALUE!		8.63	219				
111	247	147	129	167	#VALUE!		8.83	224				
112	252	150	129	166	#VALUE!		9.02	229				
113	258	154	129	164	#VALUE!		9.22	234				
114	263	157	129	162	#VALUE!		9.42	239				

FIG. 11B1H



	A	B	C	D	E	F	G	H	I	J	K	L
115	15.9		10.56	6.32	5.09	6.34						
116	16		10.77	6.46	5.11	6.28						
117	16.1		10.98	6.61	5.13	6.22						
118	16.2		11.20	6.75	5.16	6.17						
119	16.3		11.41	6.90	5.20	6.12						
120	16.4		11.62	7.05	5.23	6.08						
121	16.5		11.83	7.20	5.28	6.04						
122	16.6		12.05	7.35	5.33	6.00						
123	16.7		12.26	7.50	5.38	5.96						
124	16.8		12.48	7.66	5.44	5.93						
125	16.9		12.69	7.82	5.50	5.90						
126	17		12.91	7.98	5.56	5.87						
127	17.1		13.12	8.14	5.63	5.85						
128	17.2		13.34	8.30	5.71	5.83						
129	17.3		13.55	8.46	5.79	5.81						
130	17.4		13.77	8.62	5.87	5.80						
131	17.5		13.99	8.79	5.95	5.79						
132	17.6		14.20	8.96	6.04	5.79						
133	17.7		14.42	9.12	6.13	5.78						
134	17.8		14.64	9.29	6.22	5.79						
135	17.9		14.86	9.46	6.32	5.79						
136	18		15.07	9.63	6.42	5.80						
137	18.1		15.29	9.80	6.52	5.81						
138	18.2		15.51	9.97	6.63	5.83						
139	18.3		15.73	10.14	6.73	5.85						
140	18.4		15.95	10.31	6.84	5.87						
141	18.5		16.17	10.49	6.95	5.90						
142	18.6		16.39	10.66	7.07	5.93						
143	18.7		16.60	10.84	7.18	5.96						
144	18.8		16.82	11.01	7.30	6.00						
145	18.9		17.04	11.19	7.42	6.04						
146	19		17.26	11.36	7.54	6.08						
147	19.1		17.48	11.54	7.66	6.12						
148	19.2		17.70	11.72	7.79	6.17						
149	19.3		17.92	11.89	7.91	6.22						
150	19.4		18.14	12.07	8.04	6.28						

FIG. 11B2A



	M	N	O	P	Q	R	S	T	U	V	W	X
115	268	161	129	161	#VALUE!		9.62	244				
116	274	164	130	160	#VALUE!		9.82	249			199	199
117	279	168	130	158	#VALUE!		10.02	255				
118	284	171	131	157	#VALUE!		10.22	260				
119	290	175	132	156	#VALUE!		10.43	265				
120	295	179	133	154	#VALUE!		10.63	270				
121	301	183	134	153	#VALUE!		10.83	275				
122	306	187	135	152	#VALUE!		11.04	280				
123	311	191	137	151	#VALUE!		11.24	286				
124	317	195	138	151	#VALUE!		11.45	291				
125	322	199	140	150	#VALUE!		11.65	296				
126	328	203	141	149	#VALUE!		11.86	301				
127	333	207	143	149	#VALUE!		12.07	306				
128	339	211	145	148	#VALUE!		12.27	312				
129	344	215	147	148	#VALUE!		12.48	317				
130	350	219	149	147	#VALUE!		12.69	322				
131	355	223	151	147	#VALUE!		12.90	328				
132	361	227	153	147	#VALUE!		13.11	333				
133	366	232	156	147	#VALUE!		13.31	338				
134	372	236	158	147	#VALUE!		13.52	343				
135	377	240	161	147	#VALUE!		13.73	349				
136	383	245	163	147	#VALUE!		13.94	354				
137	388	249	166	148	#VALUE!		14.15	359				
138	394	253	168	148	#VALUE!		14.36	365				
139	400	258	171	149	#VALUE!		14.57	370				
140	405	262	174	149	#VALUE!		14.78	375				
141	411	266	177	150	#VALUE!		14.99	381				
142	416	271	180	151	#VALUE!		15.20	386				
143	422	275	182	151	#VALUE!		15.42	392				
144	427	280	185	152	#VALUE!		15.63	397				
145	433	284	188	153	#VALUE!		15.84	402				
146	438	289	192	154	#VALUE!		16.05	408				
147	444	293	195	156	#VALUE!		16.26	413				
148	450	298	198	157	#VALUE!		16.47	418				
149	455	302	201	158	#VALUE!		16.69	424				
150	461	307	204	160	#VALUE!		16.90	429				

FIG. 11B2B

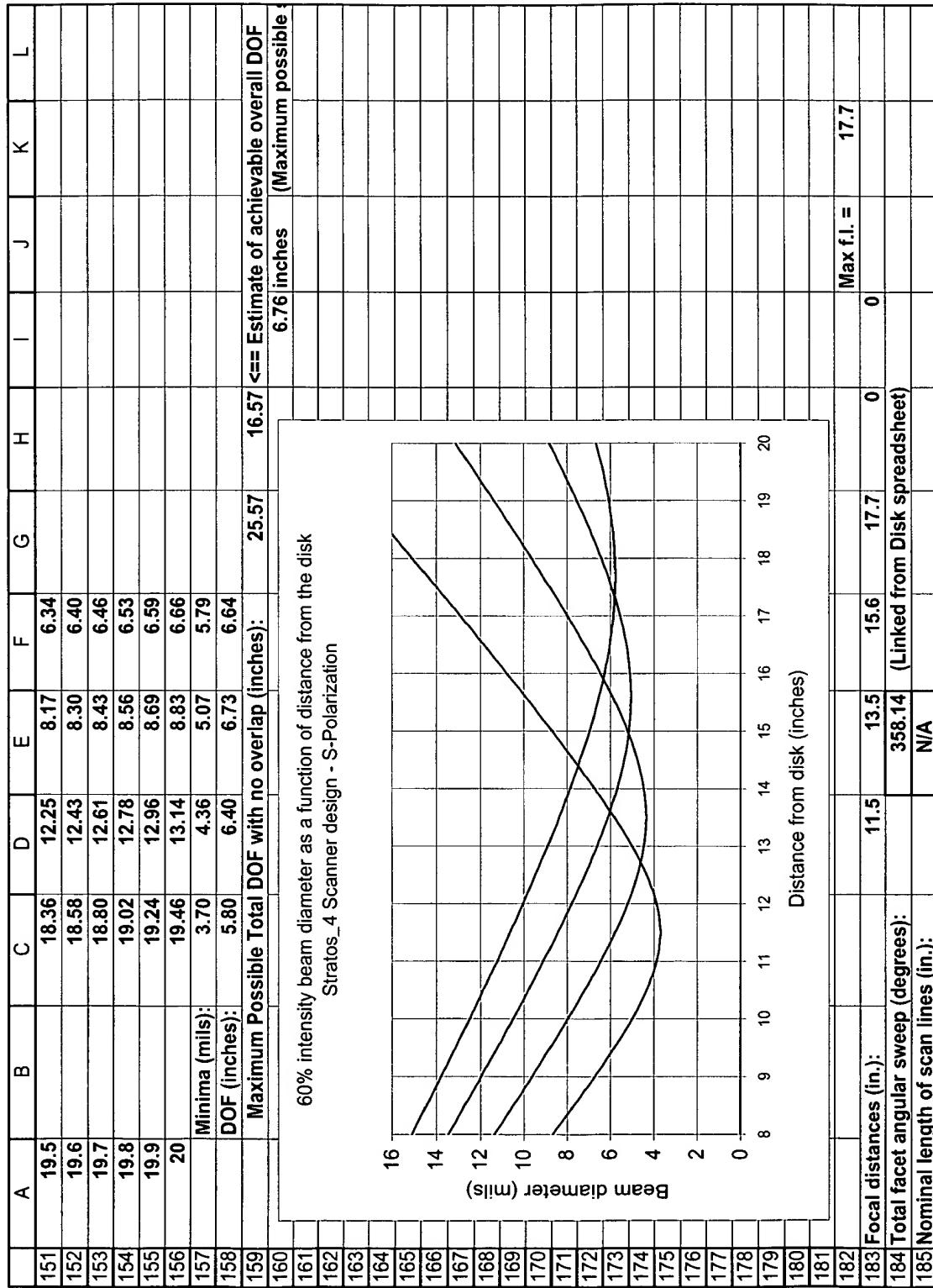
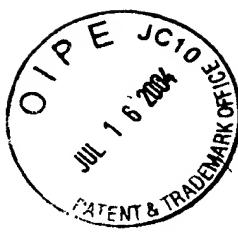
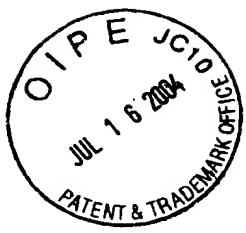
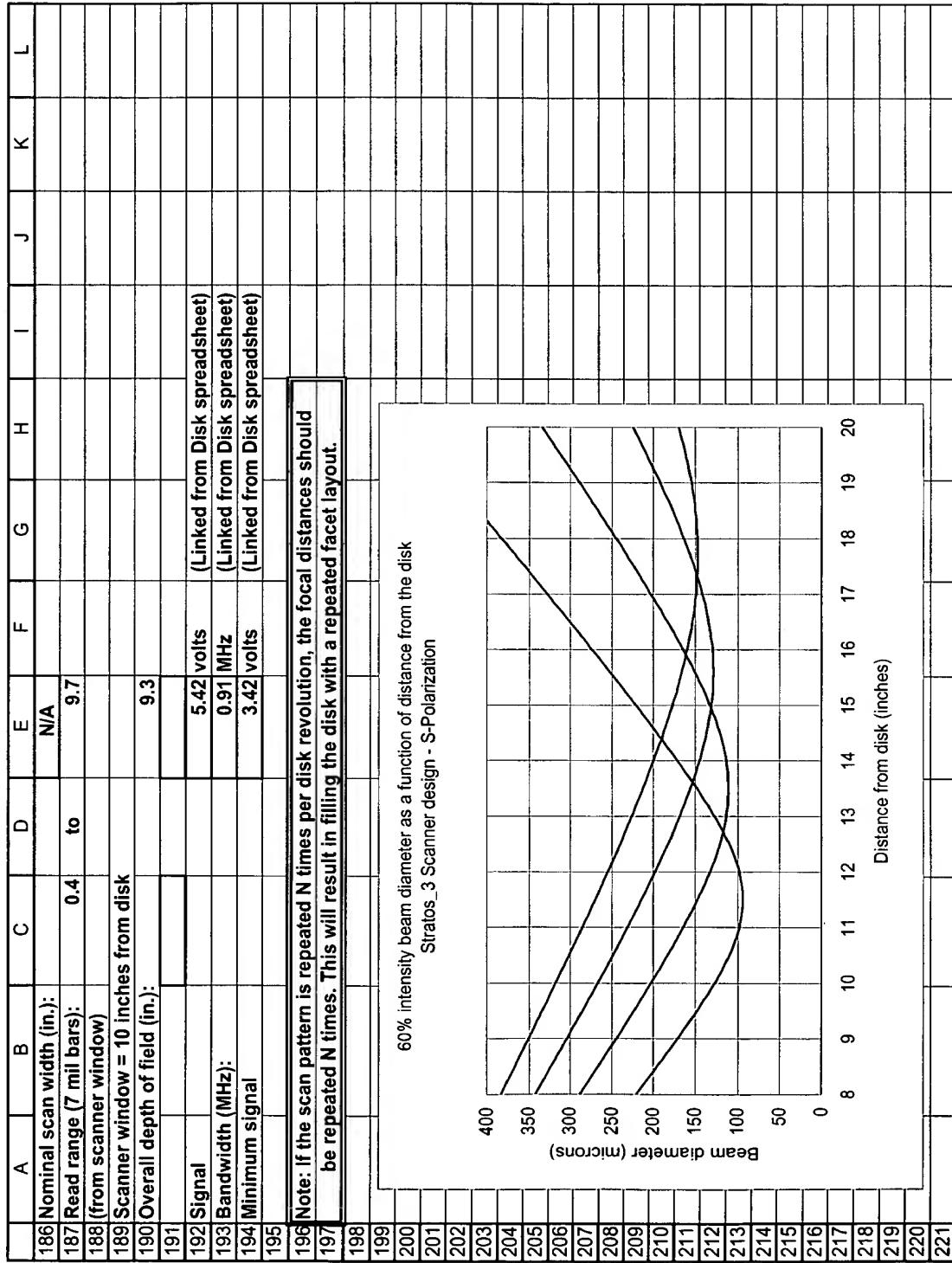


FIG. 11B2C



M	N	O	P	Q	R	S	T	U	V	W	X
151	466	311	207	161	#VALUE!	17.11	435				
152	472	316	211	162	#VALUE!	17.32	440				
153	478	320	214	164	#VALUE!	17.54	445				
154	483	325	217	166	#VALUE!	17.75	451				
155	489	329	221	167	#VALUE!	17.96	456				
156	494	334	224	169	#VALUE!	18.18	462				
157											
158											
159											
160	single-focal-plane DOF										
161											
162											
163											
164											
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183											
184											
185											

FIG. 11B2D



**FIG. 11B2E**

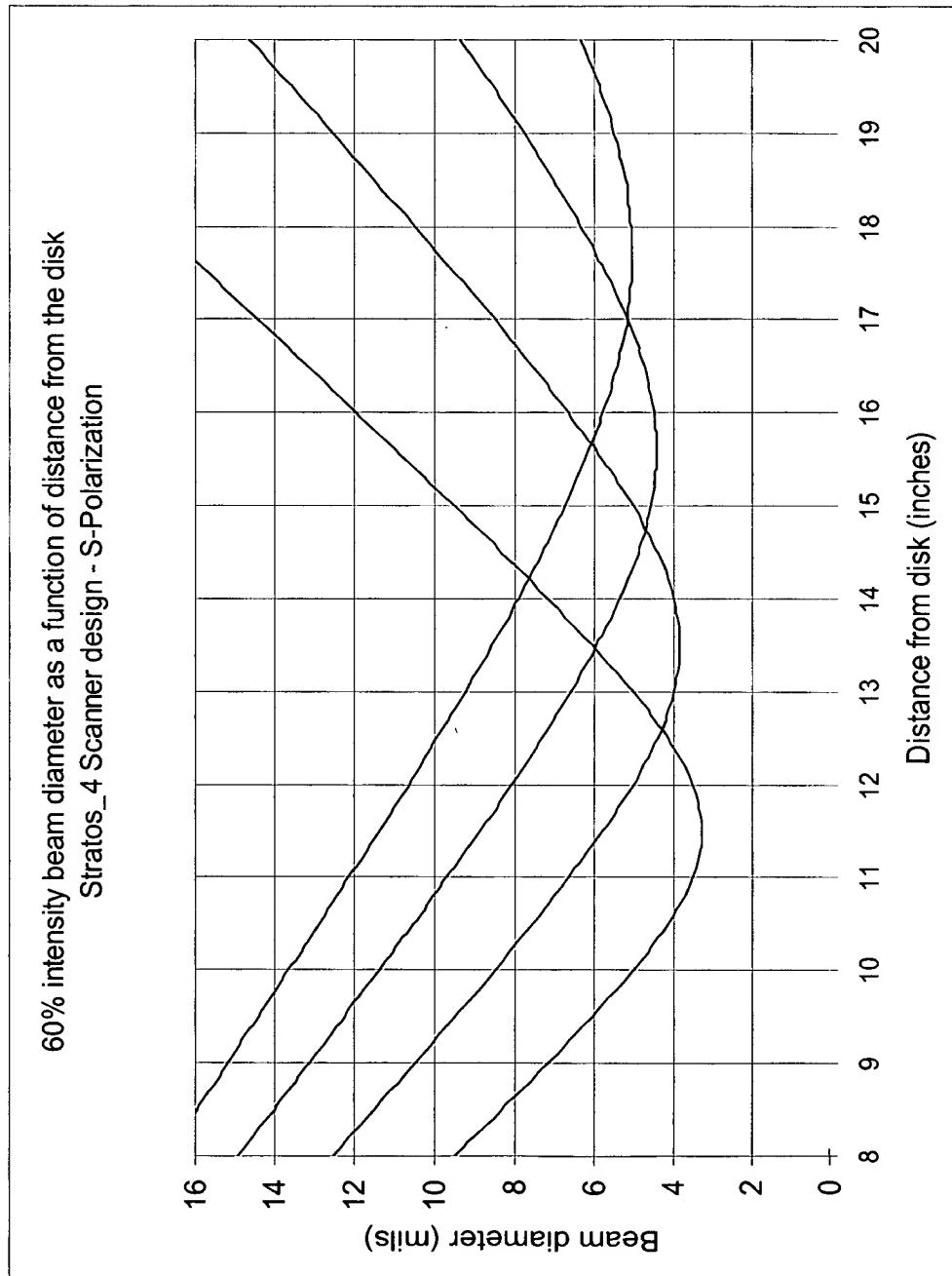


FIG. 11B3

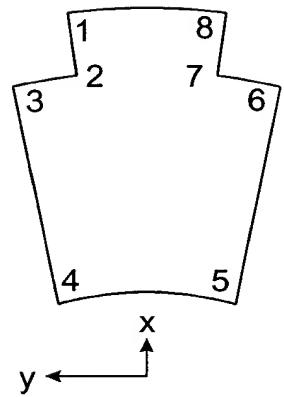


FIG. 12A1

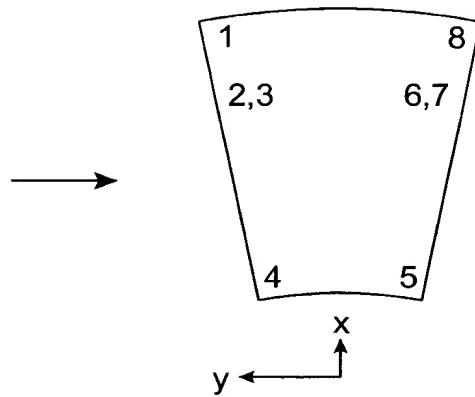


FIG. 12A2

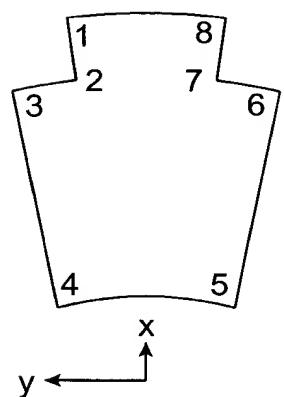


FIG. 12B1

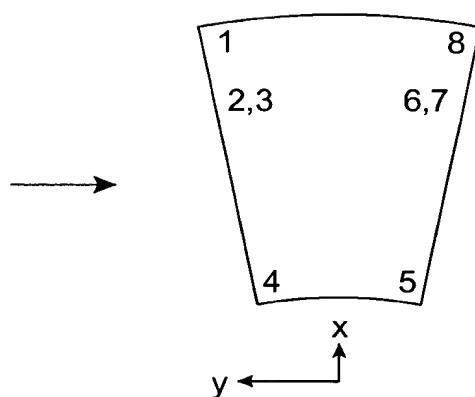


FIG. 12B2

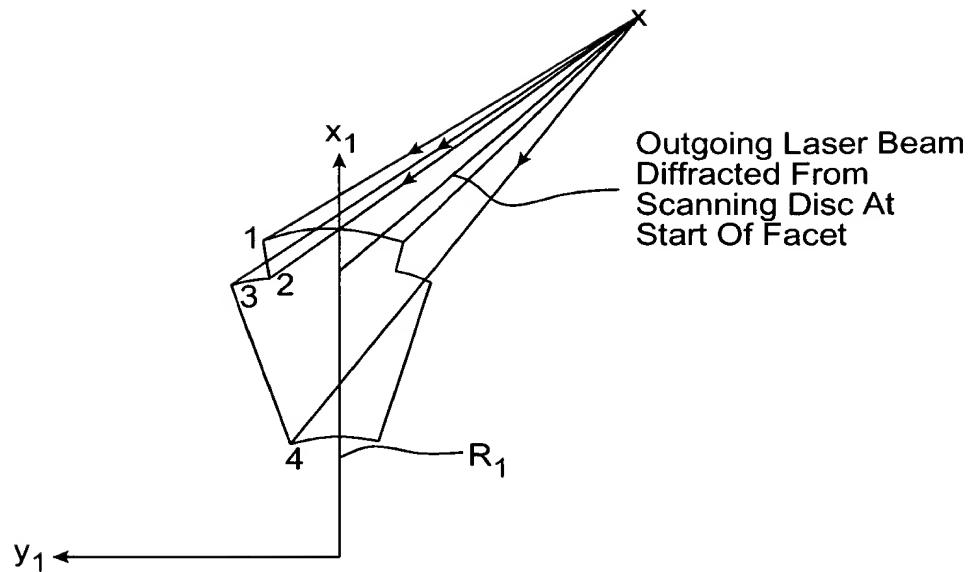
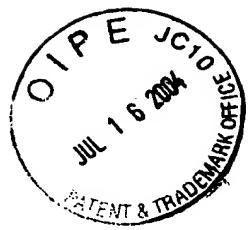


FIG. 12C1

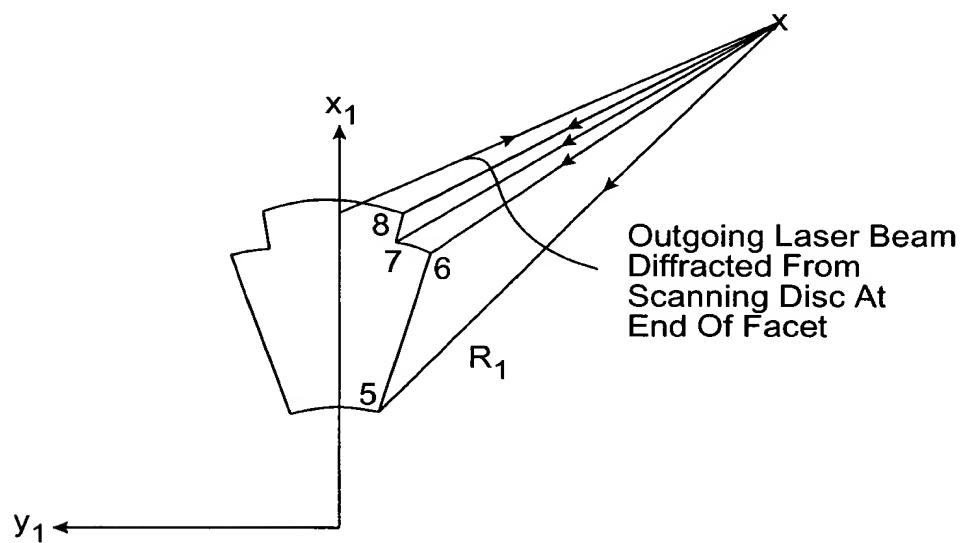


FIG. 12C2

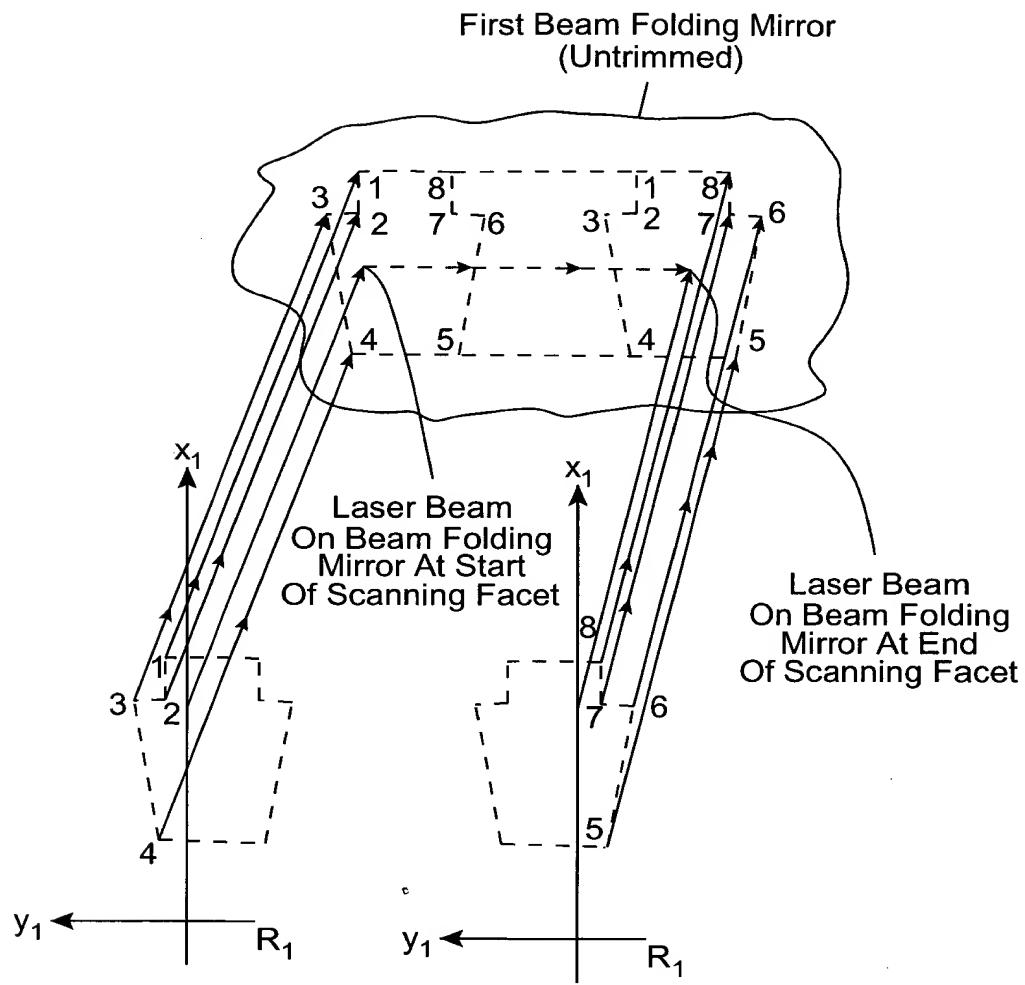
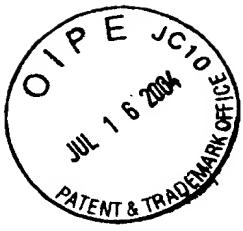
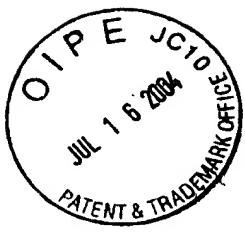


FIG. 12D



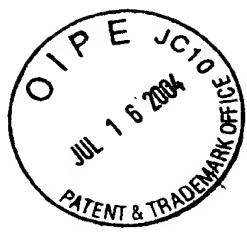
	A	B	C	D	E	F	G	H	I	J
75		1			2			3		
76		Facet			Facet			Facet		
77 G1	8			10				12		
78 Point 1	3.94874	-0.02294	2.12380	3.83250	0.07718	2.09937	3.75358	0.10925	2.09325	
79 Point 2	3.65113	-0.12038	2.16443	3.53978	-0.02665	2.14166	3.45010	0.00887	2.13498	
80 Point 3	3.61581	-0.03502	2.14098	3.53978	-0.02665	2.14166	3.44555	0.02059	2.13175	
81 Point 4	2.64691	-0.40575	2.28887	2.88384	-0.25930	2.23643	2.44051	-0.31915	2.27208	
82 Point 5	2.79472	-1.59304	2.62907	3.02644	-1.72489	2.65801	2.54066	-1.56107	2.63017	
83 Point 6	3.81419	-2.04371	2.71867	3.69455	-2.02106	2.71697	3.56179	-2.02254	2.72286	
84 Point 7	3.82907	-1.96478	2.69504	3.69455	-2.02106	2.71697	3.56439	-2.01174	2.71960	
85 Point 8	4.13065	-2.08452	2.71758	3.98553	-2.15005	2.74265	3.86380	-2.14515	2.74622	
86 Point 9	3.94874	-0.02294	2.12380	3.83250	0.07718	2.09937	3.75358	0.10925	2.09325	
87 Start of scan line	4.02545	-0.67817	2.31174	3.92247	-0.62341	2.30000	3.82454	-0.57134	2.28883	
88 Middle of rotation	4.02545	-0.67817	2.31174	3.92247	-0.62341	2.30000	3.82454	-0.57134	2.28883	
89 End of scan line	4.04162	-1.16307	2.45250	3.92934	-1.15860	2.45580	3.81937	-1.12321	2.44999	
90										

FIG. 13A1



	A	B	C	D	E	F	G	H	I	J
91		Facet			Facet			Facet		
92	G2	7			9			11		
93	Point 1	4.02247	2.19033	2.58609	3.91799	2.45353	2.76685	3.80802	2.74420	2.96322
94	Point 2	3.79236	2.11753	2.69195	3.69690	2.36537	2.86040	3.58337	2.64904	3.05579
95	Point 3	3.78639	2.20453	2.73451	3.69690	2.36537	2.86040	3.58162	2.66095	3.06217
96	Point 4	3.05197	1.92230	3.05003	3.21262	2.17226	3.06533	2.85731	2.34705	3.35743
97	Point 5	2.64347	-0.27369	2.31221	2.81913	-0.34045	2.17660	2.54140	-0.10460	2.44937
98	Point 6	3.25774	-0.84215	1.68794	3.25935	-0.70440	1.74867	3.23044	-0.61969	1.80401
99	Point 7	3.29896	-0.76438	1.69797	3.25935	-0.70440	1.74867	3.23562	-0.60869	1.80582
100	Point 8	3.50262	-0.93172	1.50046	3.46547	-0.87482	1.54830	3.45674	-0.77127	1.59994
101	Point 9	4.02247	2.19033	2.58609	3.91799	2.45353	2.76685	3.80802	2.74420	2.96322
102	Start of scan line	3.88910	1.13139	2.19201	3.81752	1.25640	2.29108	3.73628	1.40993	2.40874
103	Middle of rotation	3.83943	0.57926	1.97459	3.76954	0.54210	2.00000	3.70069	0.50549	2.02503
104	End of scan line	3.77386	0.09914	1.79899	3.72144	0.14315	1.85024	3.66728	0.18290	1.90064
105										

FIG. 13A2



	A	B	C	D	E	F	G
	Facet			Facet			
106							
107 G3		1			2		
108	Point 1	5.11617	1.95380	1.89155	5.01400	1.88093	1.96715
109	Point 2	4.98460	1.86904	1.98969	4.88136	1.79109	2.06571
110	Point 3	4.94695	2.08109	2.03847	4.88064	1.79549	2.06667
111	Point 4	4.55990	1.69707	2.31542	4.46955	1.51422	2.37191
112	Point 5	4.35785	-1.63559	2.18575	4.29296	-1.52325	2.24765
113	Point 6	4.71038	-2.01784	1.86940	4.68022	-1.80322	1.91239
114	Point 7	4.77395	-1.80620	1.83693	4.68147	-1.79883	1.91177
115	Point 8	4.89971	-1.89063	1.72862	4.80732	-1.88882	1.80291
116	Point 9	5.11617	1.95380	1.89155	5.01400	1.88093	1.96715
117	Start of scan line	5.11614	1.00830	1.80878	5.02116	0.94389	1.87935
118	Middle of rotation	5.03523	0.00000	1.78542	4.95474	0.00000	1.85000
119	End of scan line	5.00607	-0.96140	1.72464	4.92129	-0.94701	1.79393
120							

FIG. 13A3A



	H	I	J	K	L	M
106	Facet			Facet		
107	3			4		
108	4.92433	1.81870	2.03365	4.82799	1.75935	2.10576
109	4.77964	1.72980	2.14196	4.68407	1.66502	2.21298
110	4.75362	1.86942	2.17507	4.68407	1.66502	2.21298
111	4.31720	1.51260	2.49402	4.34215	1.44090	2.46771
112	4.14486	-1.55897	2.36336	4.17995	-1.53887	2.33696
113	4.54753	-1.91413	2.00915	4.50146	-1.76326	2.05933
114	4.59009	-1.77513	1.98718	4.50146	-1.76326	2.05933
115	4.72764	-1.86391	1.86903	4.63750	-1.85821	1.94186
116	4.92433	1.81870	2.03365	4.82799	1.75935	2.10576
117	4.92928	0.88565	1.94798	4.84129	0.83137	2.01383
118	4.87537	0.00000	1.91369	4.79689	0.00000	1.97666
119	4.83778	-0.91710	1.86356	4.75656	-0.89961	1.93026
120						

FIG. 13A3B



### Station 1 M1 - XY Plane

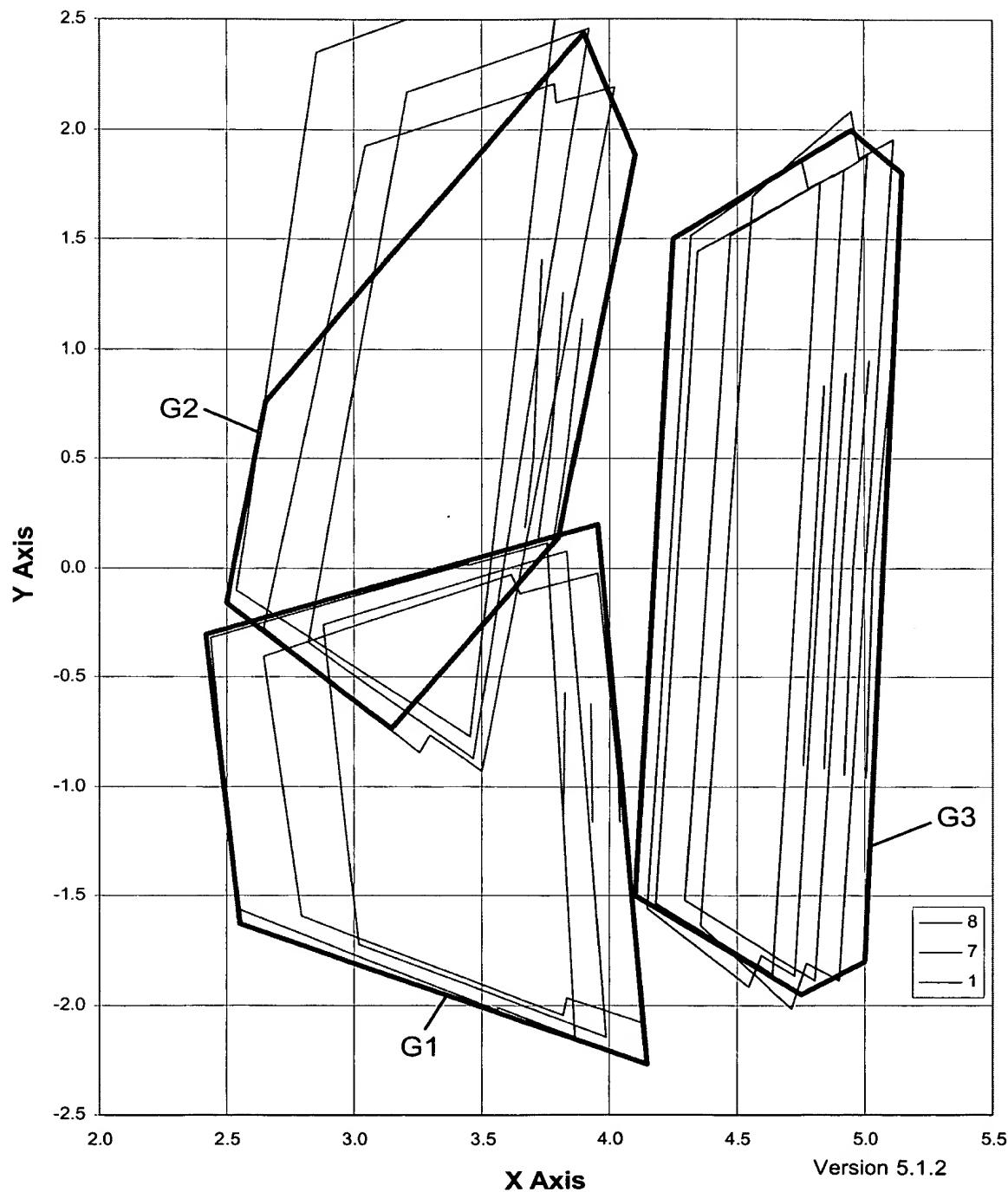
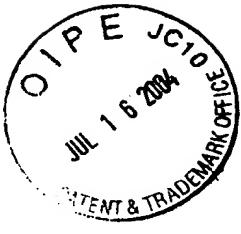
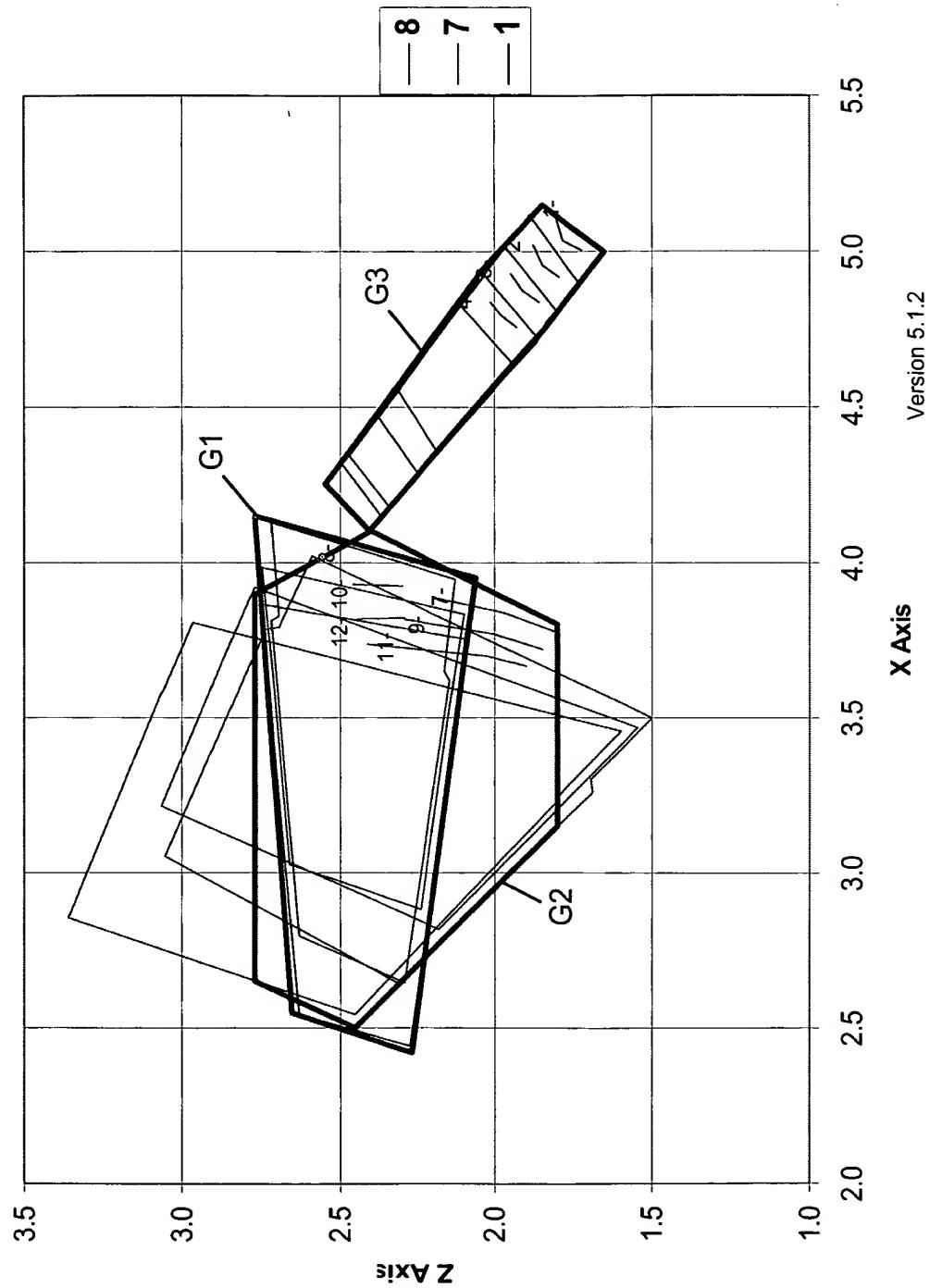


FIG. 13A4



Station 1 M1 - XZ Plane



Version 5.1.2

FIG. 13A5



Station 1 M1 - YZ Plane

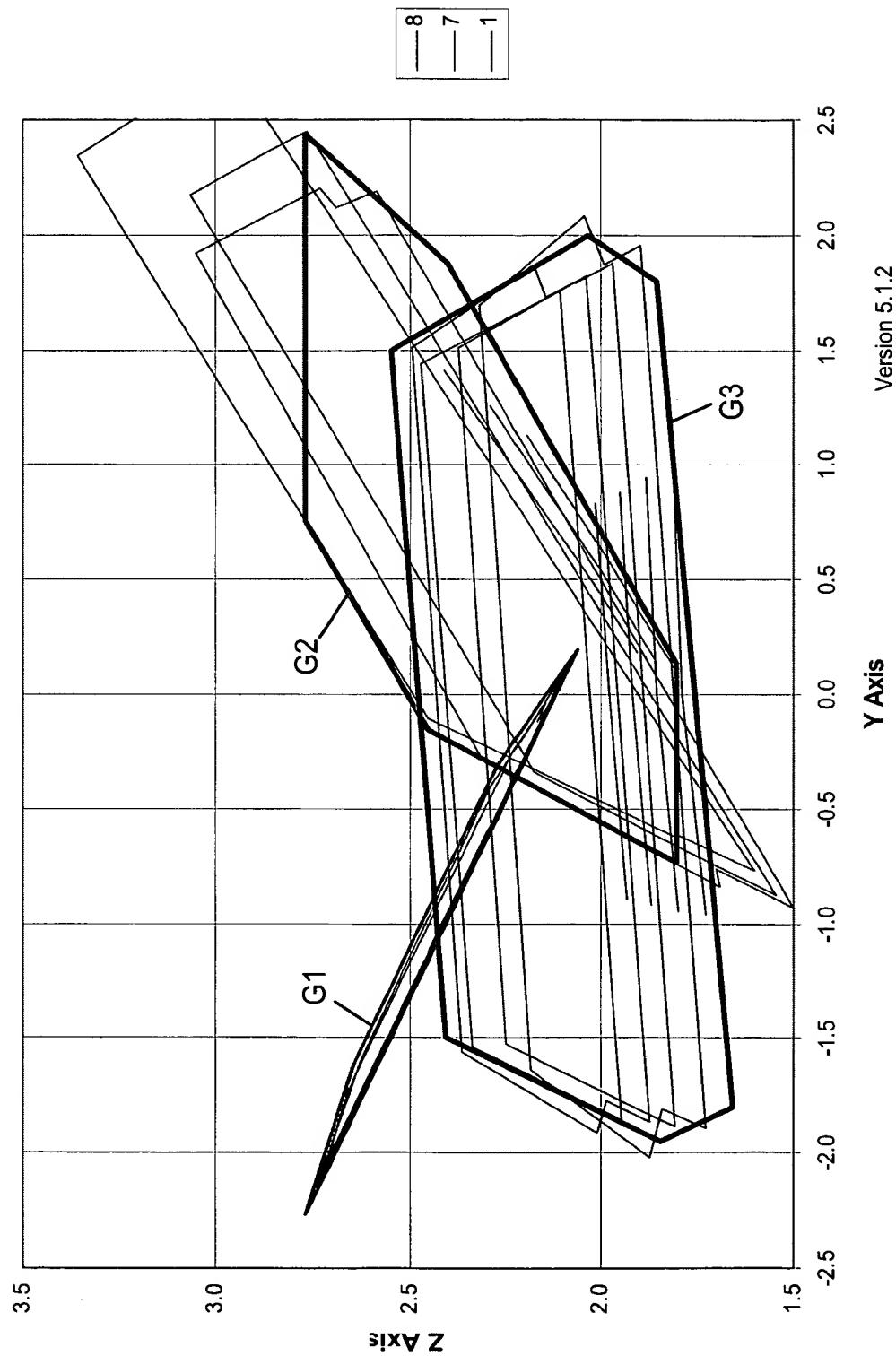


FIG. 13A6



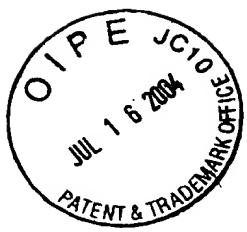
	A	B	C	D	E	F	G	H	I	J
75		1			2			3		
76		Facet			Facet			Facet		
77 G1		8			10			12		
78 Point 1	4.83616	-1.58677	0.84115	4.73669	-1.63993	0.66301	4.64314	-1.69543	0.50201	
79 Point 2	4.68429	-1.81884	0.74767	4.58926	-1.86587	0.57304	4.48446	-1.93076	0.39587	
80 Point 3	4.67878	-1.78796	0.69779	4.58926	-1.86587	0.57304	4.48358	-1.92664	0.388888	
81 Point 4	4.22223	-2.50841	0.44377	4.28260	-2.33583	0.38592	4.00469	-2.63997	0.07232	
82 Point 5	4.05858	-3.52592	1.25078	4.08790	-3.53306	1.33026	3.80481	-3.82416	0.98868	
83 Point 6	4.46417	-3.19384	1.84067	4.36259	-3.30509	1.72614	4.23639	-3.46214	1.60614	
84 Point 7	4.48187	-3.13482	1.81374	4.36259	-3.30509	1.72614	4.23895	-3.45403	1.60276	
85 Point 8	4.62128	-3.01193	2.00617	4.49650	-3.19395	1.91915	4.38465	-3.33064	1.80981	
86 Point 9	4.83616	-1.58677	0.84115	4.73669	-1.63993	0.66301	4.64314	-1.69543	0.50201	
87 Start of scan line	4.79136	-1.94631	1.15786	4.70000	-2.00000	1.00000	4.60451	-2.05611	0.83500	
88 Middle of rotation	4.79136	-1.94631	1.15786	4.70000	-2.00000	1.00000	4.60451	-2.05611	0.83500	
89 End of scan line	4.69056	-2.50111	1.56984	4.58033	-2.64637	1.47458	4.46974	-2.76462	1.34651	
90										

FIG. 13B1



	A	B	C	D	E	F	G	H	I	J
91										
92 G2	Facet	7			9					
93 Point 1	3.38194	4.20092	1.75395	3.24016	4.43917	2.01655	3.11010	4.72655	2.34142	
94 Point 2	3.16298	4.26385	1.78738	3.03125	4.49361	2.04162	2.88665	4.78740	2.37142	
95 Point 3	3.16739	4.30137	1.83403	3.03125	4.49361	2.04162	2.88663	4.79258	2.37774	
96 Point 4	2.50443	4.46930	1.90767	2.59900	4.60627	2.09349	2.21545	4.97231	2.46415	
97 Point 5	1.39822	2.79582	-0.35302	1.44696	2.82994	-0.30174	1.08385	3.11226	-0.02918	
98 Point 6	1.81107	2.39729	-0.75633	1.73748	2.57459	-0.55577	1.56833	2.71448	-0.41858	
99 Point 7	1.85962	2.41646	-0.72451	1.73748	2.57459	-0.55577	1.57414	2.71711	-0.41422	
100 Point 8	2.00251	2.29151	-0.84867	1.87437	2.45426	-0.67547	1.73191	2.58895	-0.53935	
101 Point 9	3.38194	4.20092	1.75395	3.24016	4.43917	2.01655	3.11010	4.72655	2.34142	
102 Start of scan line	3.14045	3.84670	1.27398	3.00728	4.05126	1.49719	2.86346	4.28889	1.75864	
103 Middle of rotation	2.81784	3.26851	0.50471	2.60000	3.30000	0.50000	2.37384	3.33269	0.49511	
104 End of scan line	2.37758	2.63817	-0.35149	2.22734	2.77029	-0.22004	2.06736	2.89843	-0.09537	
105										

FIG. 13B2



	A	B	C	D	E	F	G
		Facet			Facet		
106							
107 G3		1			2		
108	Point 1	4.36645	2.65376	0.19632	4.13039	2.57939	0.16456
109	Point 2	4.22328	2.62785	0.17673	3.98981	2.54937	0.14541
110	Point 3	4.17479	2.80928	0.16686	3.98888	2.55291	0.14522
111	Point 4	3.78746	2.62732	0.11577	3.58353	2.46410	0.09002
112	Point 5	3.59706	-1.89846	0.16625	3.42901	-1.80124	0.14108
113	Point 6	4.00140	-2.16622	0.22737	3.86105	-1.97527	0.20449
114	Point 7	4.06710	-1.99138	0.23359	3.86230	-1.97181	0.20460
115	Point 8	4.22016	-2.04815	0.25597	4.01328	-2.03180	0.22675
116	Point 9	4.36645	2.65376	0.19632	4.13039	2.57939	0.16456
117	Start of scan line	4.40361	1.87032	0.21487	4.17745	1.84317	0.18369
118	Middle of rotation	4.29670	0.23013	0.22786	4.10000	0.25000	0.20000
119	End of scan line	4.30920	-1.28070	0.25535	4.10701	-1.28789	0.22718
120							

FIG. 13B3A



	H	I	J	K	L	M
106	Facet			Facet		
107	3			4		
108	3.89207	2.57127	0.13136	3.63985	2.49916	0.09731
109	3.72893	2.54596	0.10897	3.48464	2.46924	0.07610
110	3.69351	2.66161	0.10205	3.48464	2.46924	0.07610
111	3.24144	2.51989	0.04122	3.13971	2.40274	0.02898
112	3.10957	-1.84718	0.09718	3.03925	-1.79742	0.08649
113	3.58373	-2.08109	0.16749	3.40752	-1.93323	0.14032
114	3.62849	-1.96992	0.17186	3.40752	-1.93323	0.14032
115	3.80192	-2.02808	0.19711	3.57430	-1.99474	0.16470
116	3.89207	2.57127	0.13136	3.63985	2.49916	0.09731
117	3.94222	1.82246	0.15114	3.70025	1.80404	0.11760
118	3.89313	0.27090	0.17070	3.67474	0.29297	0.13978
119	3.89234	-1.26997	0.19685	3.66999	-1.27076	0.16575
120						

FIG. 13B3B



Station 1 M2- XY Plane

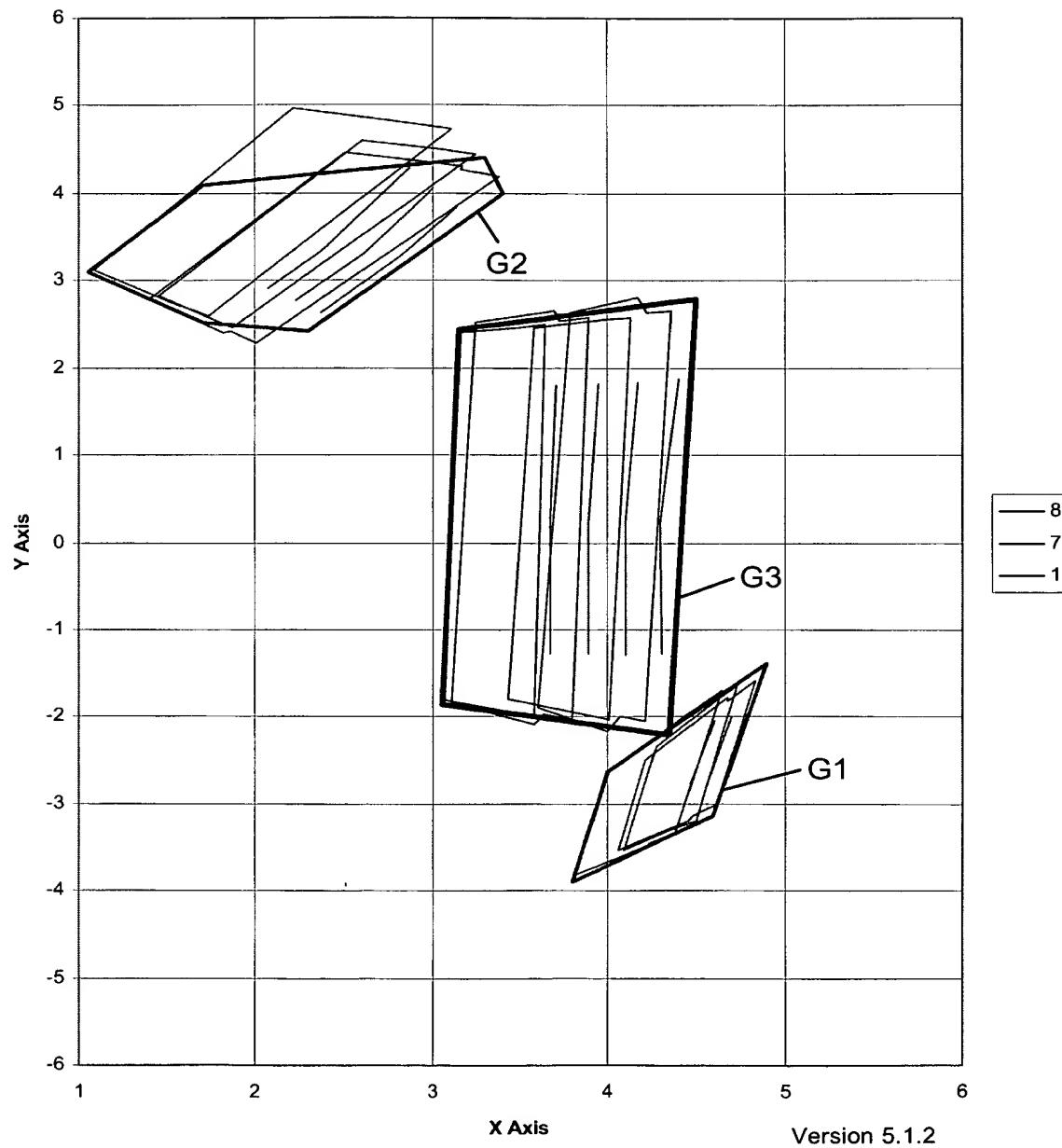
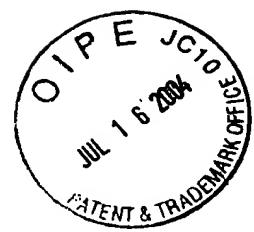


FIG. 13B4



Station 1 M2 - XZ Plane

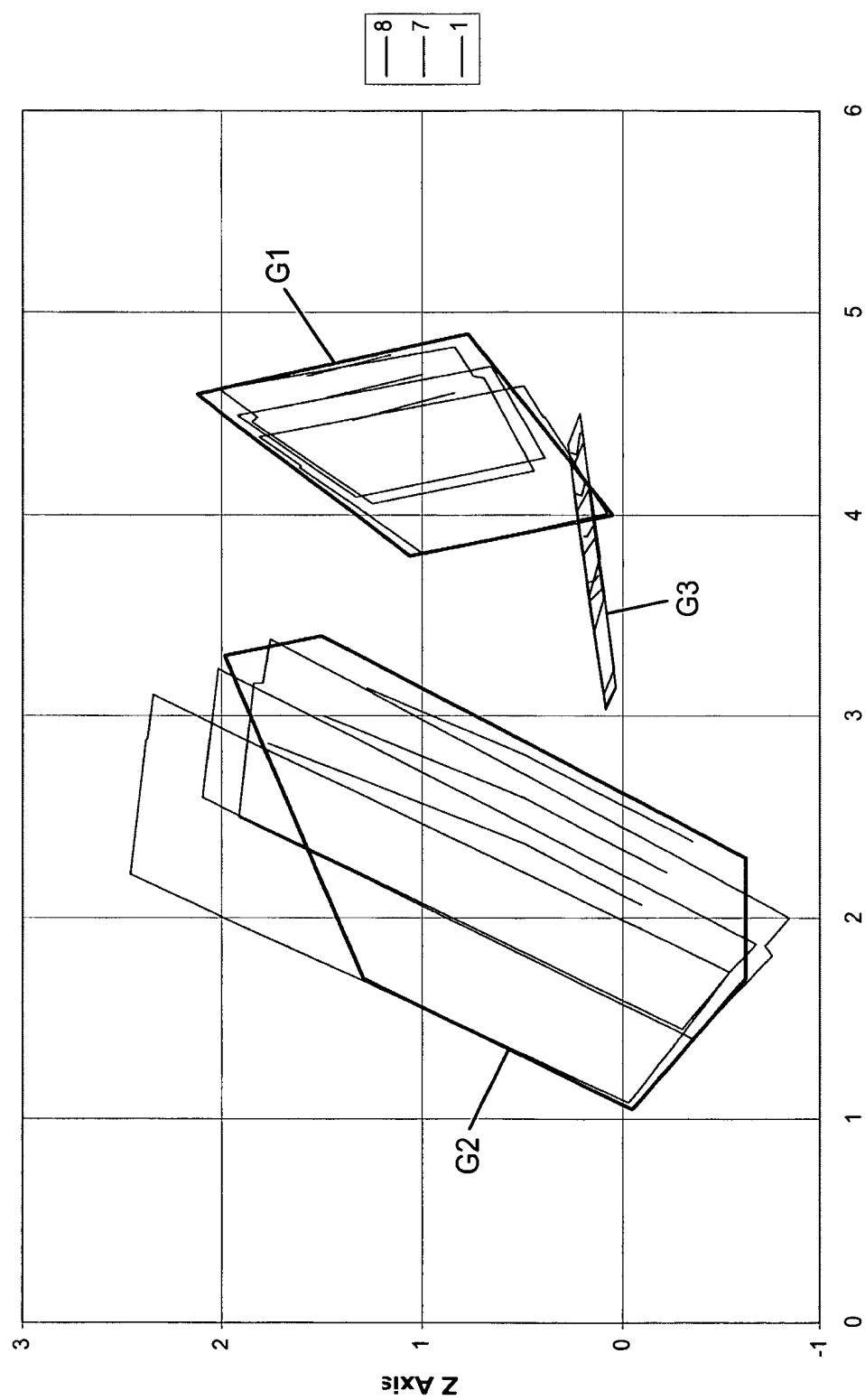
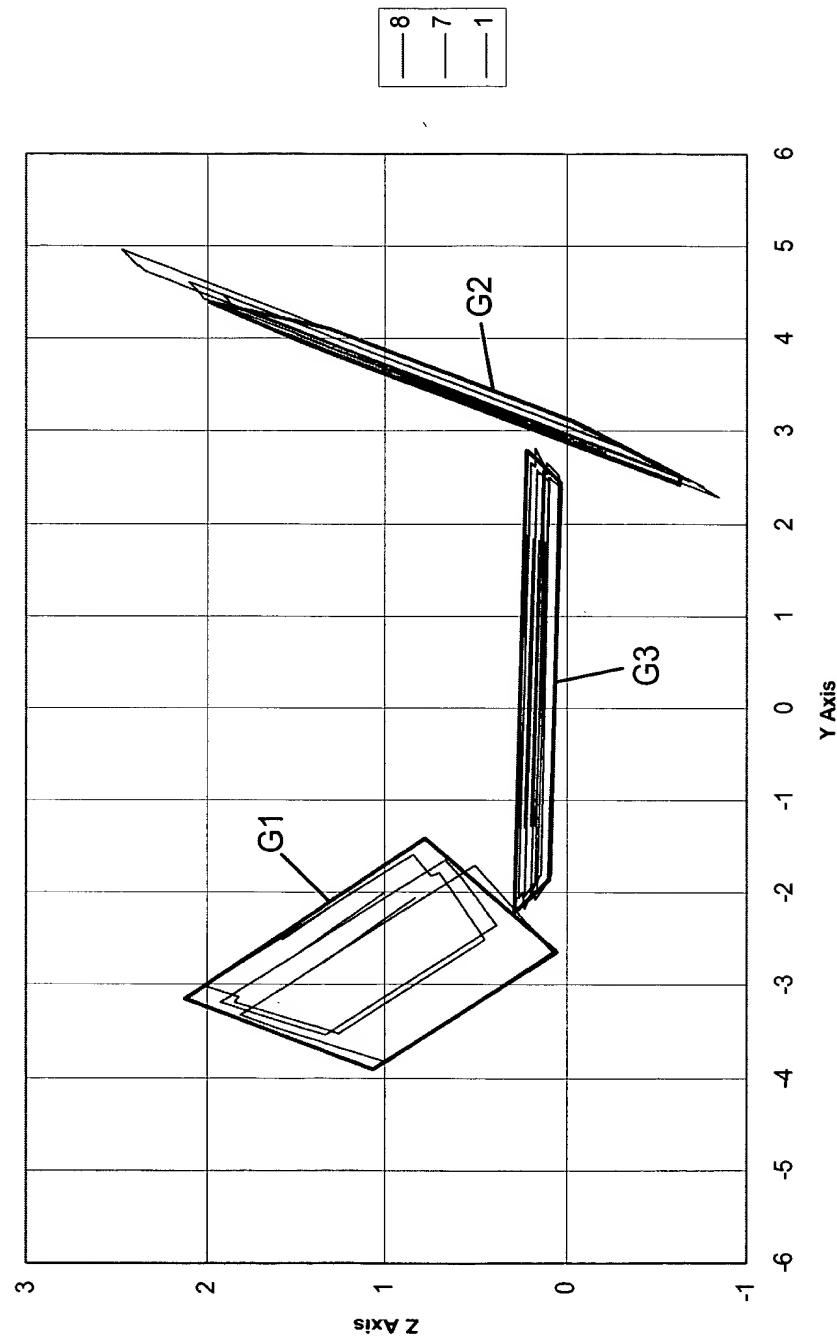


FIG. 13B5



**Station 1 M2 - YZ Plane**



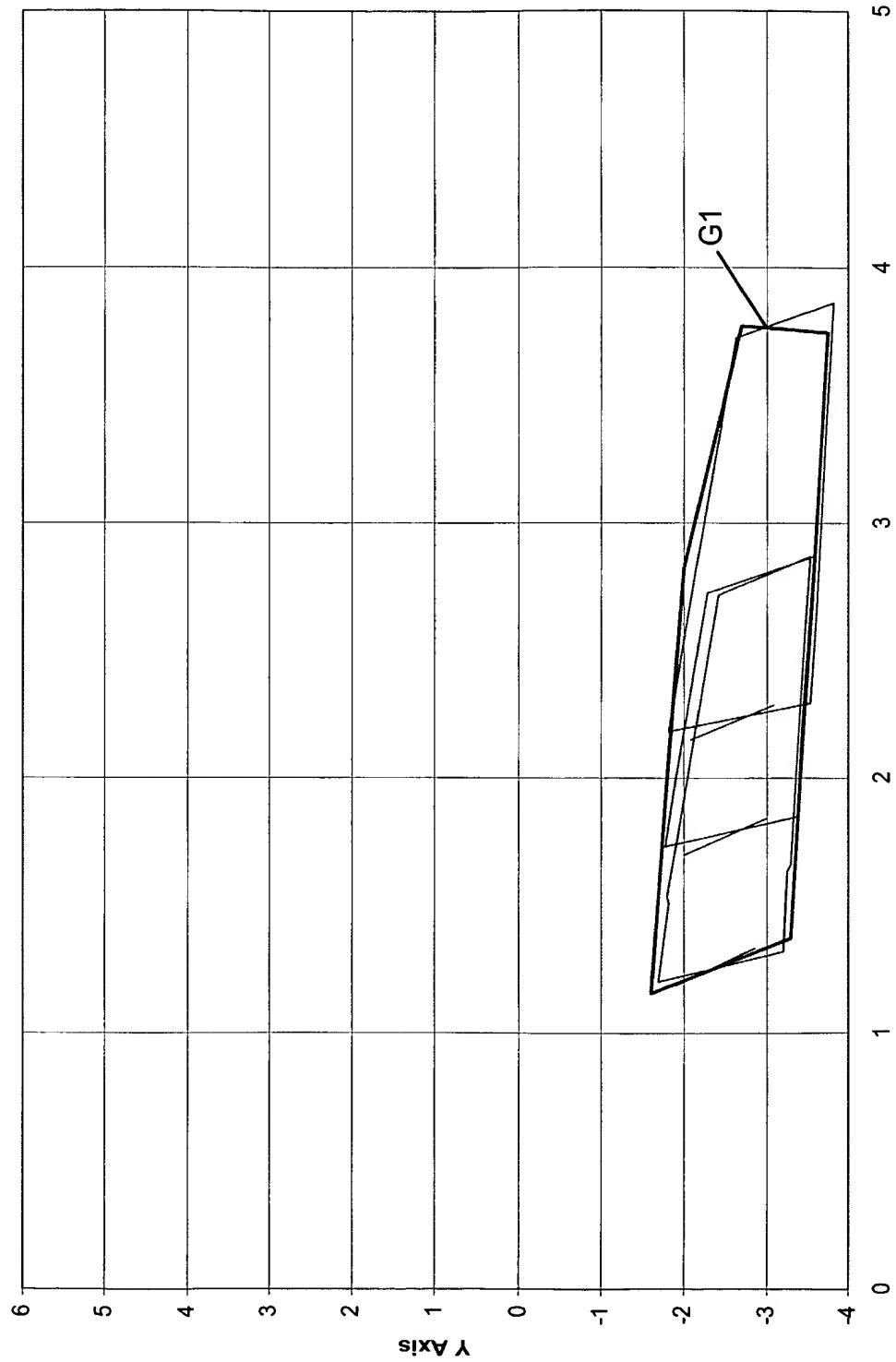
**FIG. 13B6**



	A	B	C	D	E	F	G	H	I	J
75		1			2			3		
76		Facet			Facet			Facet		
77 G1	8			10				12		
78	Point 1	1.20537	-1.67340	0.83287	1.73454	-1.76256	0.57847	2.18607	-1.81295	0.33975
79	Point 2	1.50717	-1.82194	0.77007	2.01252	-1.90575	0.52600	2.50076	-1.97962	0.28421
80	Point 3	1.53373	-1.80077	0.73570	2.01252	-1.90575	0.52600	2.50470	-1.97622	0.27888
81	Point 4	2.71992	-2.40114	0.50283	2.72609	-2.27331	0.39129	3.72651	-2.62604	0.06549
82	Point 5	2.86809	-3.52973	1.36131	2.87153	-3.57274	1.39541	3.86534	-3.82116	0.98584
83	Point 6	1.66004	-3.29877	1.91900	2.13984	-3.43596	1.73579	2.62296	-3.60007	1.57321
84	Point 7	1.63442	-3.25853	1.90105	2.13984	-3.43596	1.73579	2.61924	-3.59386	1.57029
85	Point 8	1.32257	-3.19447	2.04127	1.85089	-3.38194	1.87021	2.29384	-3.53522	1.72352
86	Point 9	1.20537	-1.67340	0.83287	1.73454	-1.76256	0.57847	2.18607	-1.81295	0.33975
87	Start of scan line	1.19058	-1.90430	1.03659	1.70000	-2.00000	0.80000	2.15170	-2.08486	0.59022
88	Middle of rotation	1.19058	-1.90430	1.03659	1.70000	-2.00000	0.80000	2.15170	-2.08486	0.59022
89	End of scan line	1.33110	-2.85916	1.75349	1.84105	-3.01433	1.56667	2.29073	-3.10310	1.36142
90										

FIG. 13C1

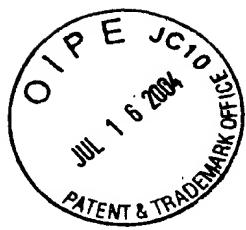
**Station 1 M3- XY Plane**



**FIG. 13C2**



—8



Station 1 M3 - XZ Plane

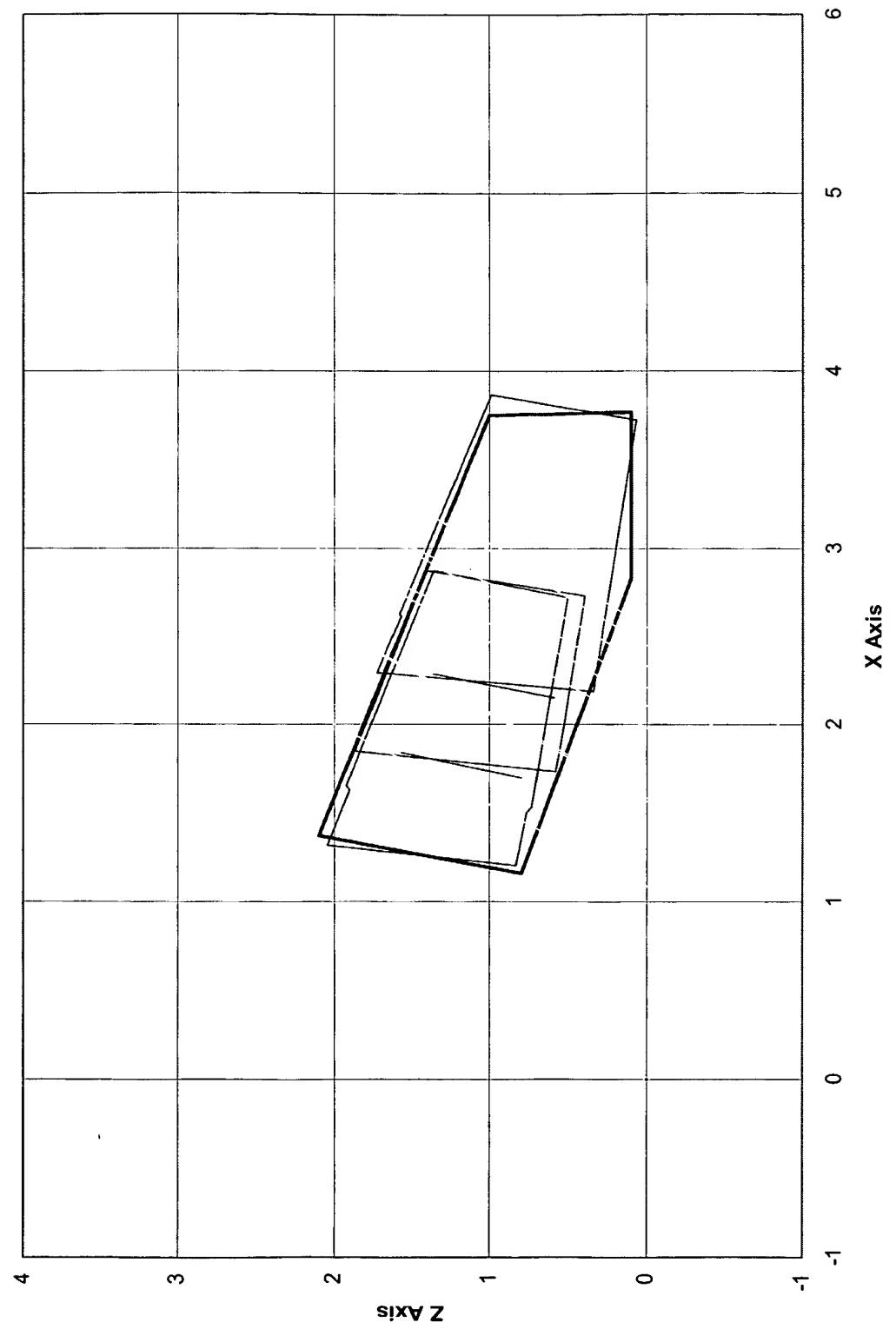
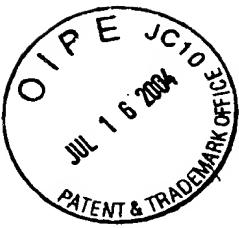


FIG. 13C3



Station 1 M3 - YZ Plane

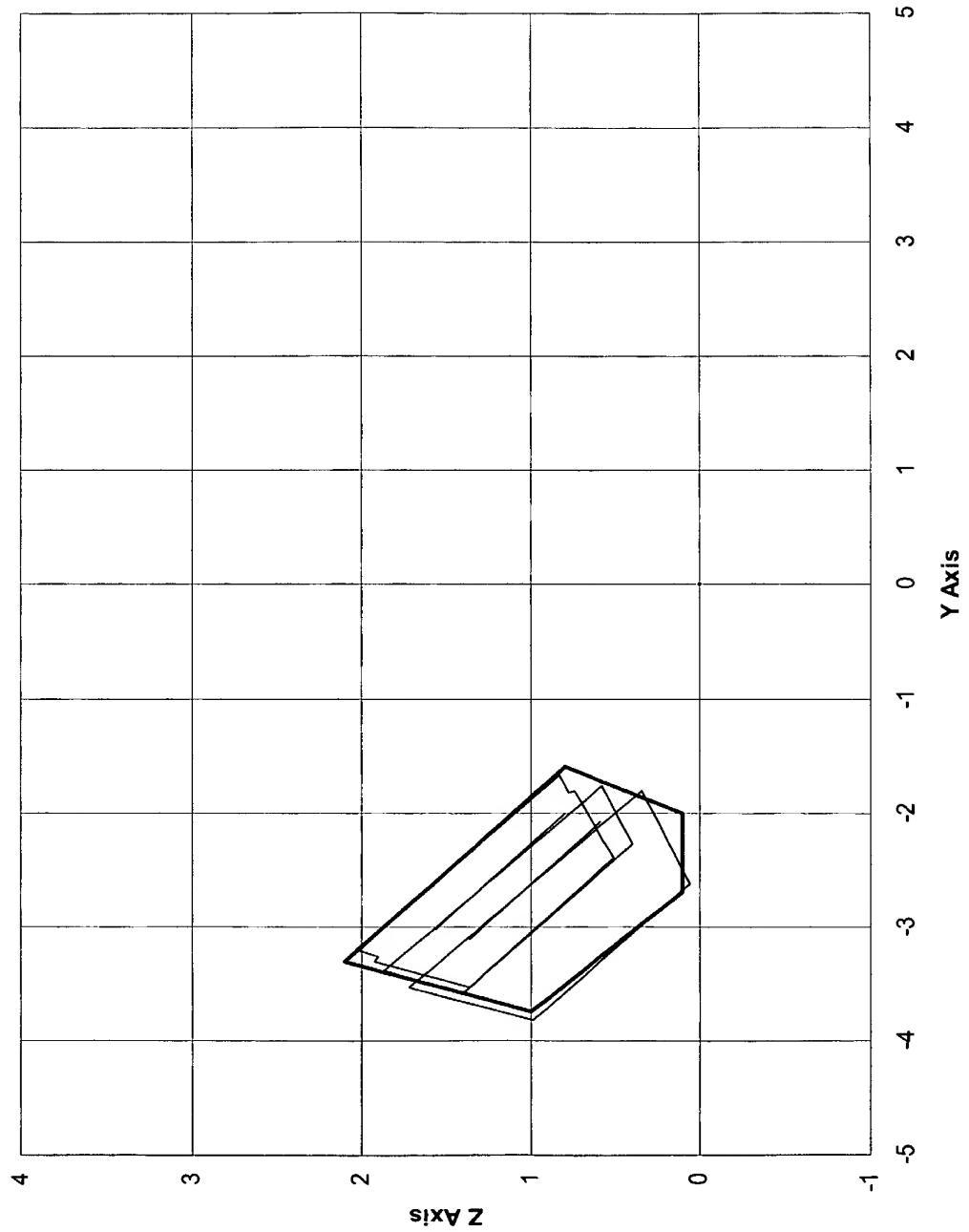
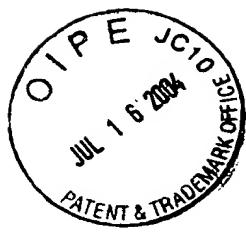


FIG. 13C4



	A	B	C	D	E	F	G	H	I	J
75		1			2			3		
76		Facet								
77 G1	8			10				12		
78	Point 1	1.20537	-1.67340	0.83287	1.73454	-1.76256	0.57847	2.18607	-1.81295	0.33975
79	Point 2	1.50717	-1.82194	0.77007	2.01252	-1.90575	0.52600	2.50076	-1.97962	0.28421
80	Point 3	1.53373	-1.80077	0.73570	2.01252	-1.90575	0.52600	2.50470	-1.97622	0.27888
81	Point 4	2.71992	-2.40114	0.50283	2.72609	-2.27331	0.39129	3.72651	-2.62604	0.06549
82	Point 5	2.86809	-3.52973	1.36131	2.87153	-3.57274	1.39541	3.86534	-3.82116	0.98584
83	Point 6	1.66004	-3.29877	1.91900	2.13984	-3.43596	1.73579	2.62296	-3.60007	1.57321
84	Point 7	1.63442	-3.25853	1.90105	2.13984	-3.43596	1.73579	2.61924	-3.59386	1.57029
85	Point 8	1.32257	-3.19447	2.04127	1.85089	-3.38194	1.87021	2.29384	-3.53522	1.72352
86	Point 9	1.20537	-1.67340	0.83287	1.73454	-1.76256	0.57847	2.18607	-1.81295	0.33975
87	Start of scan line	1.19058	-1.90430	1.03659	1.70000	-2.00000	0.80000	2.15170	-2.08486	0.59022
88	Middle of rotation	1.19058	-1.90430	1.03659	1.70000	-2.00000	0.80000	2.15170	-2.08486	0.59022
89	End of scan line	1.33110	-2.85916	1.75349	1.84105	-3.01433	1.56667	2.29073	-3.10310	1.36142
90										

FIG. 13D1



	A	B	C	D	E	F	G	H	I	J
105										
106										
107	G3	Facet 1			Facet 2			Facet 3		
108	Point 1	5.04006	0.52476	1.76314	4.94178	0.55167	1.81997	4.85731	0.53894	1.86881
109	Point 2	4.87042	0.444428	1.86123	4.77196	0.46655	1.91816	4.67548	0.45660	1.97394
110	Point 3	4.83173	0.66283	1.88360	4.77125	0.47110	1.91857	4.65020	0.60068	1.98856
111	Point 4	4.32129	0.28599	2.17873	4.24022	0.20212	2.22561	4.09186	0.25949	2.31139
112	Point 5	4.34770	-1.84845	2.16347	4.26992	-1.86717	2.20844	4.08721	-1.77102	2.31408
113	Point 6	4.77372	-2.25670	1.91714	4.71924	-2.17652	1.94864	4.56410	-2.15769	2.03834
114	Point 7	4.83579	-2.04739	1.88125	4.72049	-2.17219	1.94791	4.60668	-2.01968	2.01372
115	Point 8	4.98278	-2.13965	1.79626	4.86407	-2.27009	1.86490	4.76563	-2.11752	1.92182
116	Point 9	5.04006	0.52476	1.76314	4.94178	0.55167	1.81997	4.85731	0.53894	1.86881
117	Start of scan line	5.02090	0.00000	1.77422	4.92826	0.00000	1.82778	4.83795	0.00000	1.88000
118	Middle of rotation	5.02090	0.00000	1.77422	4.92826	0.00000	1.82778	4.83795	0.00000	1.88000
119	End of scan line	5.06055	-1.14492	1.75129	4.96268	-1.22889	1.80788	4.85432	-1.09333	1.87053
120										

FIG. 14A1A

120



	K	L	M	N	O	P	Q	R	S
105									
106	Facet			Facet			Facet		
107	4			5			6		
108	4.76146	0.57105	1.92423	4.59494	0.56809	2.02051	4.42086	0.60393	2.12116
109	4.58109	0.48315	2.02852	4.39766	0.48153	2.13458	4.21826	0.51160	2.23831
110	4.58109	0.48315	2.02852	4.39672	0.48704	2.13512	4.21826	0.51160	2.23831
111	4.14950	0.27280	2.27807	3.77405	0.21047	2.49515	3.84486	0.34144	2.45421
112	4.12497	-1.92124	2.29225	3.74166	-1.46848	2.51388	3.79316	-1.27109	2.48410
113	4.49172	-2.17143	2.08019	4.30150	-1.80374	2.19018	4.13935	-1.47056	2.28393
114	4.49172	-2.17143	2.08019	4.30312	-1.79844	2.18924	4.13935	-1.47056	2.28393
115	4.64469	-2.27578	1.99174	4.48021	-1.90337	2.08685	4.32687	-1.57861	2.17551
116	4.76146	0.57105	1.92423	4.59494	0.56809	2.02051	4.42086	0.60393	2.12116
117	4.74966	0.00000	1.93105	4.57806	0.00000	2.03027	4.41147	0.00000	2.12659
118	4.74966	0.00000	1.93105	4.57806	0.00000	2.03027	4.41147	0.00000	2.12659
119	4.76001	-1.19617	1.92507	4.57039	-0.89357	2.03470	4.40142	-0.64218	2.13240
120									

FIG. 14A1B



	A	B	C	D	E	F	G	H	I	J
105										
106										
107 G3	Facet 1				Facet 2					
108	Point 1 4.82498	0.44237	0.26978	4.65503	0.44811	0.22157	4.49179	0.44459	0.17770	
109	Point 2 4.66874	0.36963	0.24652	4.50103	0.37345	0.19944	4.31949	0.37132	0.15017	
110	Point 3 4.62719	0.54611	0.18746	4.50022	0.37701	0.19826	4.28911	0.48536	0.11104	
111	Point 4 4.18842	0.22763	0.15299	4.04652	0.15472	0.133371	3.79612	0.20147	0.05234	
112	Point 5 4.29176	-2.24588	0.84926	4.17480	-2.32513	0.83855	3.90727	-2.24907	0.74455	
113	Point 6 4.69167	-2.49257	1.02567	4.59519	-2.46863	0.99272	4.37431	-2.45821	0.92926	
114	Point 7 4.74716	-2.30530	0.99034	4.59627	-2.46486	0.99200	4.41150	-2.33743	0.90686	
115	Point 8 4.89443	-2.35176	1.04332	4.74099	-2.51341	1.04484	4.57811	-2.38443	0.96529	
116	Point 9 4.82498	0.44237	0.26978	4.65503	0.44811	0.22157	4.49179	0.44459	0.17770	
117	Start of scan line 4.82442	0.00000	0.38908	4.66490	0.00000	0.34528	4.50000	-0.00001	0.30000	
118	Middle of rotation 4.82442	0.00000	0.38907	4.66490	0.00000	0.34528	4.50000	0.00000	0.30000	
119	End of scan line 4.94361	-1.51167	0.82998	4.80210	-1.65515	0.82987	4.62188	-1.53817	0.74880	
120										

FIG. 14B1A



	K	L	M	N	O	P	Q	R	S
105									
106	Facet								
107	4			5					
108	4.30775	0.44954	0.12583	3.93952	0.44834	0.02505	3.52125	0.44891	-0.08994
109	4.14124	0.37427	0.10044	3.74647	0.37385	-0.00784	3.32508	0.37322	-0.12337
110	4.14124	0.37427	0.10044	3.74516	0.37803	-0.00933	3.32508	0.37322	-0.12337
111	3.76359	0.20355	0.04285	3.17535	0.15541	-0.10566	2.98199	0.24084	-0.18182
112	3.89193	-2.41913	0.78626	3.29187	-2.00085	0.50856	3.10607	-1.64117	0.36043
113	4.25097	-2.52955	0.91466	3.86517	-2.15630	0.70794	3.47166	-1.74831	0.48974
114	4.25097	-2.52955	0.91466	3.86651	-2.15188	0.70712	3.47166	-1.74831	0.48974
115	4.41114	-2.57881	0.97193	4.06339	-2.20429	0.77533	3.68342	-1.81036	0.56463
116	4.30775	0.44954	0.12583	3.93952	0.44834	0.02505	3.52125	0.44891	-0.08994
117	4.32901	0.00000	0.25305	3.96553	0.00000	0.15325	3.56687	0.00000	0.04380
118	4.32901	0.00000	0.25305	3.96553	0.00000	0.15325	3.56687	0.00000	0.04380
119	4.47185	-1.71403	0.75509	4.08537	-1.40033	0.56428	3.67805	-1.09574	0.37020
120									

FIG. 14B1B



	A	B	C	D	E	F	G	H	I	J
105										
106	Facet									
107 G3	1			2					Facet	
108	Point 1	4.82498	0.44237	0.26978	4.65503	0.44811	0.22157	4.49179	0.44459	0.17770
109	Point 2	4.66874	0.36963	0.24652	4.50103	0.37345	0.19944	4.31949	0.37132	0.15017
110	Point 3	4.62719	0.54611	0.18746	4.50022	0.37701	0.19826	4.28911	0.48536	0.11104
111	Point 4	4.18842	0.22763	0.15299	4.04652	0.15472	0.13371	3.79612	0.20147	0.05234
112	Point 5	4.29176	-2.24588	0.84926	4.17480	-2.32513	0.83855	3.90727	-2.24907	0.74455
113	Point 6	4.69167	-2.49257	1.02567	4.59519	-2.46863	0.99272	4.37431	-2.45821	0.92926
114	Point 7	4.74716	-2.30530	0.99034	4.59627	-2.46486	0.99200	4.41150	-2.33743	0.90686
115	Point 8	4.89443	-2.35176	1.04332	4.74099	-2.51341	1.04484	4.57811	-2.38443	0.96529
116	Point 9	4.82498	0.44237	0.26978	4.65503	0.44811	0.22157	4.49179	0.44459	0.17770
117	Start of scan line	4.82442	0.00000	0.38908	4.66490	0.00000	0.34528	4.50000	-0.00001	0.30000
118	Middle of rotation	4.82442	0.00000	0.38907	4.66490	0.00000	0.34528	4.50000	0.00000	0.30000
119	End of scan line	4.94361	-1.51167	0.82998	4.80210	-1.65515	0.82987	4.62188	-1.53817	0.74880
120										

FIG. 14C1A



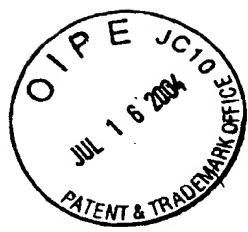
	K	L	M	N	O	P	Q	R	S
105									
106	Facet			Facet					
107	4			5				6	
108	4.30775	0.44954	0.12583	3.93952	0.44834	0.02505	3.52125	0.44891	-0.08994
109	4.14124	0.37427	0.10044	3.74647	0.37385	-0.00784	3.32508	0.37322	-0.12337
110	4.14124	0.37427	0.10044	3.74516	0.37803	-0.00933	3.32508	0.37322	-0.12337
111	3.76359	0.20355	0.04285	3.17535	0.15541	-0.10566	2.98199	0.24084	-0.18182
112	3.89193	-2.41913	0.78626	3.29187	-2.00085	0.50856	3.10607	-1.64117	0.36043
113	4.25097	-2.52955	0.91466	3.86517	-2.15630	0.70794	3.47166	-1.74831	0.48974
114	4.25097	-2.52955	0.91466	3.86651	-2.15188	0.70712	3.47166	-1.74831	0.48974
115	4.41114	-2.57881	0.97193	4.06339	-2.20429	0.77533	3.68342	-1.81036	0.56463
116	4.30775	0.44954	0.12583	3.93952	0.44834	0.02505	3.52125	0.44891	-0.08994
117	4.32901	0.00000	0.25305	3.96553	0.00000	0.15325	3.56687	0.00000	0.04380
118	4.32901	0.00000	0.25305	3.96553	0.00000	0.15325	3.56687	0.00000	0.04380
119	4.47185	-1.71403	0.75509	4.08537	-1.40033	0.56428	3.67805	-1.09574	0.37020
120									

FIG. 14C1B



	A	B	C	D	E	F	G	H	I	J
105										
106		Facet								
107 G3		1			2				3	
108	Point 1	4.82498	0.44237	0.26978	4.65503	0.44811	0.22157	4.49179	0.44459	0.17770
109	Point 2	4.66874	0.36963	0.24652	4.50103	0.37345	0.19944	4.31949	0.37132	0.15017
110	Point 3	4.62719	0.54611	0.18746	4.50022	0.37701	0.19826	4.28911	0.48536	0.11104
111	Point 4	4.18842	0.22763	0.15299	4.04652	0.15472	0.13371	3.79612	0.20147	0.05234
112	Point 5	4.29176	-2.24588	0.84926	4.17480	-2.32513	0.83855	3.90727	-2.24907	0.74455
113	Point 6	4.69167	-2.49257	1.02567	4.59519	-2.46863	0.99272	4.37431	-2.45821	0.92926
114	Point 7	4.74716	-2.30530	0.99034	4.59627	-2.46486	0.99200	4.41150	-2.33743	0.90686
115	Point 8	4.89443	-2.35176	1.04332	4.74099	-2.51341	1.04484	4.57811	-2.38443	0.96529
116	Point 9	4.82498	0.44237	0.26978	4.65503	0.44811	0.22157	4.49179	0.44459	0.17770
117	Start of scan line	4.82442	0.00000	0.38908	4.66490	0.00000	0.34528	4.50000	-0.00001	0.30000
118	Middle of rotation	4.82442	0.00000	0.38907	4.66490	0.00000	0.34528	4.50000	0.00000	0.30000
119	End of scan line	4.94361	-1.51167	0.82998	4.80210	-1.65515	0.82987	4.62188	-1.53817	0.74880
120										

FIG. 14D1A



	K	L	M	N	O	P	Q	R	S
105									
106	Facet			Facet					
107	4			5				6	
108	4.30775	0.44954	0.12583	3.93952	0.44834	0.02505	3.52125	0.44891	-0.08994
109	4.14124	0.37427	0.10044	3.74647	0.37385	-0.00784	3.32508	0.37322	-0.12337
110	4.14124	0.37427	0.10044	3.74516	0.37803	-0.00933	3.32508	0.37322	-0.12337
111	3.76359	0.20355	0.04285	3.17535	0.15541	-0.10566	2.98199	0.24084	-0.18182
112	3.89193	-2.41913	0.78626	3.29187	-2.00085	0.50856	3.10607	-1.64117	0.36043
113	4.25097	-2.52955	0.91466	3.86517	-2.15630	0.70794	3.47166	-1.74831	0.48974
114	4.25097	-2.52955	0.91466	3.86651	-2.15188	0.70712	3.47166	-1.74831	0.48974
115	4.41114	-2.57881	0.97193	4.06339	-2.20429	0.77533	3.68342	-1.81036	0.56463
116	4.30775	0.44954	0.12583	3.93952	0.44834	0.02505	3.52125	0.44891	-0.08994
117	4.32901	0.00000	0.25305	3.96553	0.00000	0.15325	3.56687	0.00000	0.04380
118	4.32901	0.00000	0.25305	3.96553	0.00000	0.15325	3.56687	0.00000	0.04380
119	4.47185	-1.71403	0.75509	4.08537	-1.40033	0.56428	3.67805	-1.09574	0.37020
120									

FIG. 14D1B



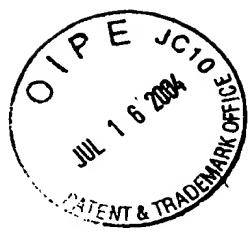
	A	B	C	D	E	F	G	H	I	J
75			1			2			3	
76		Facet							Facet	
77 G1		8			10				12	
78	Point 1	5.95032	-0.72592	5.72516	5.75912	-0.72344	5.84633	5.57831	-0.71341	5.95933
79	Point 2	5.80752	-0.82205	5.83575	5.62511	-0.81564	5.95052	5.42747	-0.80763	6.07464
80	Point 3	5.79099	-0.77284	5.83618	5.62511	-0.81564	5.95052	5.42531	-0.80078	6.07461
81	Point 4	5.35054	-1.10363	6.18430	5.33722	-1.01369	6.17433	4.95130	-1.10154	6.43794
82	Point 5	5.44406	-4.23150	6.76631	5.37166	-4.30055	6.82654	4.94319	-4.40584	7.12079
83	Point 6	5.82668	-4.38204	6.55370	5.60403	-4.39100	6.69722	5.33088	-4.56037	6.90578
84	Point 7	5.83655	-4.33627	6.53803	5.60403	-4.39100	6.69722	5.33250	-4.55423	6.90349
85	Point 8	5.95867	-4.37550	6.46837	5.71110	-4.43267	6.63764	5.45432	-4.60159	6.83568
86	Point 9	5.95032	-0.72592	5.72516	5.75912	-0.72344	5.84633	5.57831	-0.71341	5.95933
87	Start of scan line	5.99623	-1.21758	5.79678	5.80609	-1.19815	5.91380	5.61623	-1.19501	6.03397
88	Middle of rotation	6.00363	-1.72998	5.89717	5.80862	-1.62630	6.00000	5.61481	-1.52325	6.10220
89	End of scan line	5.95828	-3.76722	6.34386	5.72650	-3.84809	6.50794	5.48105	-3.93033	6.68100
90										

FIG. 15A1



	A	B	C	D	E	F	G	H	I	J
91										
92	G2	7	Facet		9	Facet			11	
93	Point 1	5.95867	4.37550	6.46837	5.71110	4.43267	6.63764	5.45432	4.60159	6.83568
94	Point 2	5.83655	4.33627	6.53803	5.60403	4.39100	6.69722	5.33250	4.55423	6.90349
95	Point 3	5.82668	4.38204	6.55370	5.60403	4.39100	6.69722	5.33088	4.56037	6.90578
96	Point 4	5.44406	4.23150	6.76631	5.37166	4.30055	6.82654	4.94319	4.40584	7.12079
97	Point 5	5.35054	1.10363	6.18430	5.33722	1.01369	6.17433	4.95130	1.10154	6.43794
98	Point 6	5.79099	0.77284	5.83618	5.62511	0.81564	5.95052	5.42531	0.80078	6.07461
99	Point 7	5.80752	0.82205	5.83575	5.62511	0.81564	5.95052	5.42747	0.80763	6.07464
100	Point 8	5.95032	0.72592	5.72516	5.75912	0.72344	5.84633	5.57831	0.71341	5.95933
101	Point 9	5.95867	4.37550	6.46837	5.71110	4.43267	6.63764	5.45432	4.60159	6.83568
102	Start of scan line	5.95828	3.76722	6.34386	5.72650	3.84809	6.50794	5.48105	3.93033	6.68100
103	Middle of rotation	6.00363	1.72998	5.89717	5.80862	1.62630	6.00000	5.61481	1.52325	6.10220
104	End of scan line	5.99623	1.21758	5.79678	5.80609	1.19815	5.91380	5.61623	1.19501	6.03397
105										

FIG. 15A2



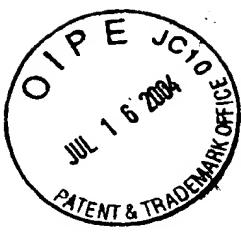
	A	B	C	D	E	F	G	H	I	J
106										
107 G3		Facet								
		1			2				3	
108	Point 1	7.38483	0.36621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
109	Point 2	7.33669	0.30677	3.72290	7.27018	0.29548	3.93289	7.20014	0.30320	4.16642
110	Point 3	7.35085	0.45214	3.76848	7.27046	0.29830	3.93374	7.20860	0.39685	4.19794
111	Point 4	7.19969	0.19089	4.09695	7.13404	0.12287	4.26827	7.04932	0.16475	4.57132
112	Point 5	6.76168	-2.71194	3.69330	6.69289	-2.84072	3.83654	6.61109	-2.72069	4.17939
113	Point 6	6.82335	-2.91744	3.36219	6.76969	-2.95787	3.51184	6.69286	-2.89597	3.80174
114	Point 7	6.86196	-2.76529	3.33225	6.77043	-2.95493	3.51128	6.71818	-2.79811	3.78090
115	Point 8	6.89054	-2.80469	3.21407	6.79682	-2.99436	3.40022	6.75093	-2.83803	3.64875
116	Point 9	7.38483	0.36621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
117	Start of scan line	7.32381	0.00361	3.57345	7.25890	0.00056	3.78342	7.19246	0.00004	4.00001
118	Middle of rotation	7.32325	0.00000	3.57301	7.25882	0.00000	3.78335	7.19245	0.00000	4.00000
119	End of scan line	7.01771	-2.11473	3.23472	6.92439	-2.31840	3.41071	6.87855	-2.14504	3.66987
120										

FIG. 15A3A



	K	L	M	N	O	P	Q	R	S
106	Facet			Facet			Facet		
107	4			5			6		
108	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
109	7.13030	0.29192	4.38726	6.97894	0.30016	4.88659	6.81701	0.28708	5.40695
110	7.13030	0.29192	4.38726	6.97921	0.30354	4.88784	6.81701	0.28708	5.40695
111	7.02005	0.15884	4.66313	6.81288	0.12498	5.31804	6.72143	0.18544	5.65479
112	6.55131	-2.93734	4.23771	6.36745	-2.80040	4.92441	6.22148	-3.06048	5.23666
113	6.61699	-3.02659	3.96692	6.47664	-2.92071	4.49196	6.28421	-3.12902	4.98858
114	6.61699	-3.02659	3.96692	6.47758	-2.91719	4.49112	6.28421	-3.12902	4.98858
115	6.64613	-3.06618	3.84679	6.51493	-2.95743	4.34377	6.32024	-3.16838	4.84610
116	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
117	7.12389	-0.00002	4.22381	6.97902	0.00007	4.69680	6.82144	0.00006	5.21121
118	7.12389	0.00000	4.22382	6.97901	0.00000	4.69679	6.82143	0.00000	5.21120
119	6.77390	-2.39464	3.85384	6.64346	-2.26763	4.35990	6.44831	-2.50435	4.84743
120									

FIG. 15A3B



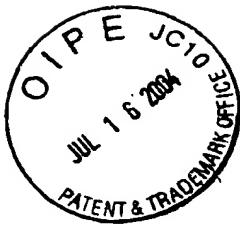
	A	B	C	D	E	F	G	H	I	J
75		1			2			3		
76		Facet			Facet			Facet		
77 G1	8			10				12		
78	Point 1	4.09124	-2.79379	3.18258	3.69818	-2.92223	3.24153	3.24420	-3.02504	3.23954
79	Point 2	4.01214	-2.84817	3.23834	3.63983	-2.96298	3.28365	3.16721	-3.07489	3.28909
80	Point 3	3.98793	-2.83938	3.21628	3.63983	-2.96298	3.28365	3.16395	-3.07385	3.28633
81	Point 4	3.75453	-3.01427	3.40306	3.51489	-3.05022	3.37382	2.92561	-3.22999	3.44252
82	Point 5	5.22942	-4.63324	6.41511	5.13129	-4.70247	6.48702	4.61719	-4.94977	6.68618
83	Point 6	5.73352	-4.52709	6.42964	5.43660	-4.63666	6.49349	5.13524	-4.83496	6.69231
84	Point 7	5.72839	-4.50585	6.39515	5.43660	-4.63666	6.49349	5.13464	-4.83220	6.68785
85	Point 8	5.89808	-4.46565	6.39317	5.58735	-4.60417	6.49668	5.31142	-4.79243	6.68904
86	Point 9	4.09124	-2.79379	3.18258	3.69818	-2.92223	3.24153	3.24420	-3.02504	3.23954
87	Start of scan line	4.26503	-2.91167	3.42532	3.84166	-3.00957	3.42658	3.41287	-3.12422	3.45169
88	Middle of rotation	4.65630	-3.25182	4.08689	4.20000	-3.30000	4.00000	3.71220	-3.35150	3.90711
89	End of scan line	5.66800	-4.26040	5.99609	5.37598	-4.41413	6.12962	5.05851	-4.57920	6.27163
90										

FIG. 15B1



	A	B	C	D	E	F	G	H	I	J
90										
91		Facet								
92 G2	7			9						
93 Point 1	5.89808	4.46565	6.39317	5.58735	4.60417	6.49668	5.31142	4.79243	6.68904	
94 Point 2	5.72839	4.50585	6.39515	5.43660	4.63666	6.49349	5.13464	4.83220	6.68785	
95 Point 3	5.73352	4.52709	6.42964	5.43660	4.63666	6.49349	5.13524	4.83496	6.69231	
96 Point 4	5.22942	4.63324	6.41511	5.13129	4.70247	6.48702	4.61719	4.94977	6.68618	
97 Point 5	3.75453	3.01427	3.40306	3.51489	3.05022	3.37382	2.92561	3.22999	3.44252	
98 Point 6	3.98793	2.83938	3.21628	3.63983	2.96298	3.28365	3.16395	3.07385	3.28633	
99 Point 7	4.01214	2.84817	3.23834	3.63983	2.96298	3.28365	3.16721	3.07489	3.28909	
100 Point 8	4.09124	2.79379	3.18258	3.69818	2.92223	3.24153	3.24420	3.02504	3.23954	
101 Point 9	5.89808	4.46565	6.39317	5.58735	4.60417	6.49668	5.31142	4.79243	6.68904	
102 Start of scan line	5.66800	4.26040	5.99609	5.37598	4.41413	6.12962	5.05851	4.57920	6.27163	
103 Middle of rotation	4.65630	3.25182	4.08689	4.20000	3.30000	4.00000	3.71220	3.35150	3.90711	
104 End of scan line	4.26503	2.91167	3.42532	3.84166	3.00957	3.42658	3.41287	3.12422	3.45169	
105										

FIG. 15B2



	A	B	C	D	E	F	G	H	I	J
106										
107 G3		Facet								
108	Point 1	7.38483	0.36621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
109	Point 2	7.33669	0.30677	3.72290	7.27018	0.29548	3.93289	7.20014	0.30320	4.16642
110	Point 3	7.35085	0.45214	3.76848	7.27046	0.29830	3.93374	7.20860	0.39685	4.19794
111	Point 4	7.19969	0.19089	4.09695	7.13404	0.12287	4.26827	7.04932	0.16475	4.57132
112	Point 5	6.76168	-2.71194	3.69330	6.69289	-2.84072	3.83654	6.61109	-2.72069	4.17939
113	Point 6	6.82335	-2.91744	3.36219	6.76969	-2.95787	3.51184	6.69286	-2.89597	3.80174
114	Point 7	6.86196	-2.76529	3.33225	6.77043	-2.95493	3.51128	6.71818	-2.79811	3.78090
115	Point 8	6.89054	-2.80469	3.21407	6.79682	-2.99436	3.40022	6.75093	-2.83803	3.64875
116	Point 9	7.38483	0.36621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
117	Start of scan line	7.32381	0.00361	3.57345	7.25890	0.00056	3.78342	7.19246	0.00004	4.00001
118	Middle of rotation	7.32325	0.00000	3.57301	7.25882	0.00000	3.78335	7.19245	0.00000	4.00000
119	End of scan line	7.01771	-2.11473	3.23472	6.92439	-2.31840	3.41071	6.87855	-2.14504	3.66987
120										

FIG. 15B3A



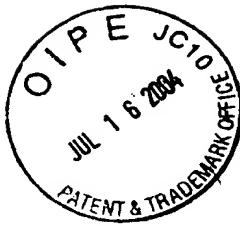
	K	L	M	N	O	P	Q	R	S
106	Facet			Facet			Facet		
107	4			5			6		
108	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
109	7.13030	0.29192	4.38726	6.97894	0.30016	4.88659	6.81701	0.28708	5.40695
110	7.13030	0.29192	4.38726	6.97921	0.30354	4.88784	6.81701	0.28708	5.40695
111	7.02005	0.15884	4.66313	6.81288	0.12498	5.31804	6.72143	0.18544	5.65479
112	6.55131	-2.93734	4.23771	6.36745	-2.80040	4.92441	6.22148	-3.06048	5.23666
113	6.61699	-3.02659	3.96692	6.47664	-2.92071	4.49196	6.28421	-3.12902	4.98858
114	6.61699	-3.02659	3.96692	6.47758	-2.91719	4.49112	6.28421	-3.12902	4.98858
115	6.64613	-3.06618	3.84679	6.51493	-2.95743	4.34377	6.32024	-3.16838	4.84610
116	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
117	7.12389	-0.00002	4.22381	6.97902	0.00007	4.69680	6.82144	0.00006	5.21121
118	7.12389	0.00000	4.22382	6.97901	0.00000	4.69679	6.82143	0.00000	5.21120
119	6.77390	-2.39464	3.85384	6.64346	-2.26763	4.35990	6.44831	-2.50435	4.84743
120									

FIG. 15B3B



	A	B	C	D	E	F	G	H	I	J
75		1			2			3		
76		Facet			10			12		
77 G1	8		Facet							
78	Point 1	4.09124	-2.79379	3.18258	3.69818	-2.92223	3.24153	3.24420	-3.02504	3.23954
79	Point 2	4.01214	-2.84817	3.23834	3.63983	-2.96298	3.28365	3.16721	-3.07489	3.28909
80	Point 3	3.98793	-2.83938	3.21628	3.63983	-2.96298	3.28365	3.16395	-3.07385	3.28633
81	Point 4	3.75453	-3.01427	3.40306	3.51489	-3.05022	3.37382	2.92561	-3.22999	3.44252
82	Point 5	5.22942	-4.63324	6.41511	5.13129	-4.70247	6.48702	4.61719	-4.94977	6.68618
83	Point 6	5.73352	-4.52709	6.42964	5.43660	-4.63666	6.49349	5.13524	-4.83496	6.69231
84	Point 7	5.72839	-4.50585	6.39515	5.43660	-4.63666	6.49349	5.13464	-4.83220	6.68785
85	Point 8	5.89808	-4.46565	6.39317	5.58735	-4.60417	6.49668	5.31142	-4.79243	6.68904
86	Point 9	4.09124	-2.79379	3.18258	3.69818	-2.92223	3.24153	3.24420	-3.02504	3.23954
87	Start of scan line	4.26503	-2.91167	3.42532	3.84166	-3.00957	3.42658	3.41287	-3.12422	3.45169
88	Middle of rotation	4.65630	-3.25182	4.08689	4.20000	-3.30000	4.00000	3.71220	-3.35150	3.90711
89	End of scan line	5.66800	-4.26040	5.99609	5.37598	-4.41413	6.12962	5.05851	-4.57920	6.27163
90										

FIG. 15C1



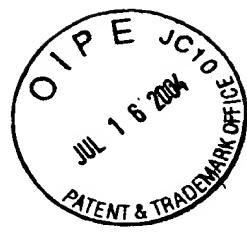
	A	B	C	D	E	F	G	H	I	J
91		Facet			Facet			Facet		
92	G2	7			9			11		
93	Point 1	5.89808	4.46565	6.39317	5.58735	4.60417	6.49668	5.31142	4.79243	6.68904
94	Point 2	5.72839	4.50585	6.39515	5.43660	4.63666	6.49349	5.13464	4.83220	6.68785
95	Point 3	5.73352	4.52709	6.42964	5.43660	4.63666	6.49349	5.13524	4.83496	6.69231
96	Point 4	5.22942	4.63324	6.41511	5.13129	4.70247	6.48702	4.61719	4.94977	6.68618
97	Point 5	3.75453	3.01427	3.40306	3.51489	3.05022	3.37382	2.92561	3.22999	3.44252
98	Point 6	3.98793	2.83938	3.21628	3.63983	2.96298	3.28365	3.16395	3.07385	3.28633
99	Point 7	4.01214	2.84817	3.23834	3.63983	2.96298	3.28365	3.16721	3.07489	3.28909
100	Point 8	4.09124	2.79379	3.18258	3.69818	2.92223	3.24153	3.24420	3.02504	3.23954
101	Point 9	5.89808	4.46565	6.39317	5.58735	4.60417	6.49668	5.31142	4.79243	6.68904
102	Start of scan line	5.66800	4.26040	5.99609	5.37598	4.41413	6.12962	5.05851	4.57920	6.27163
103	Middle of rotation	4.65630	3.25182	4.08689	4.20000	3.30000	4.00000	3.71220	3.35150	3.90711
104	End of scan line	4.26503	2.91167	3.42532	3.84166	3.00957	3.42658	3.41287	3.12422	3.45169
105										

FIG. 15C2



	A	B	C	D	E	F	G	H	I	J
106										
107 G3		Facet								
108	Point 1	7.38483	0.366621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
109	Point 2	7.33669	0.30677	3.72290	7.27018	0.29548	3.93289	7.20014	0.30320	4.16642
110	Point 3	7.35085	0.45214	3.76848	7.27046	0.29830	3.93374	7.20860	0.39685	4.19794
111	Point 4	7.19969	0.19089	4.09695	7.13404	0.12287	4.26827	7.04932	0.16475	4.57132
112	Point 5	6.76168	-2.71194	3.69330	6.69289	-2.84072	3.83654	6.61109	-2.72069	4.17939
113	Point 6	6.82335	-2.91744	3.36219	6.76969	-2.95787	3.51184	6.69286	-2.89597	3.80174
114	Point 7	6.86196	-2.76529	3.33225	6.77043	-2.95493	3.51128	6.71818	-2.79811	3.78090
115	Point 8	6.89054	-2.80469	3.21407	6.79682	-2.99436	3.40022	6.75093	-2.83803	3.64875
116	Point 9	7.38483	0.366621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
117	Start of scan line	7.32381	0.00361	3.57345	7.25890	0.00056	3.78342	7.19246	0.00004	4.00001
118	Middle of rotation	7.32325	0.00000	3.57301	7.25882	0.00000	3.78335	7.19245	0.00000	4.00000
119	End of scan line	7.01771	-2.11473	3.23472	6.92439	-2.31840	3.41071	6.87855	-2.14504	3.66987
120										

FIG. 15C3A



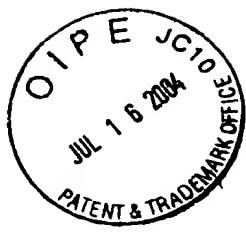
	K	L	M	N	O	P	Q	R	S
106	Facet			Facet			Facet		
107	4			5			6		
108	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
109	7.13030	0.29192	4.38726	6.97894	0.30016	4.88659	6.81701	0.28708	5.40695
110	7.13030	0.29192	4.38726	6.97921	0.30354	4.88784	6.81701	0.28708	5.40695
111	7.02005	0.15884	4.66313	6.81288	0.12498	5.31804	6.72143	0.18544	5.65479
112	6.55131	-2.93734	4.23771	6.36745	-2.80040	4.92441	6.22148	-3.06048	5.23666
113	6.61699	-3.02659	3.96692	6.47664	-2.92071	4.49196	6.28421	-3.12902	4.98858
114	6.61699	-3.02659	3.96692	6.47758	-2.91719	4.49112	6.28421	-3.12902	4.98858
115	6.64613	-3.06618	3.84679	6.51493	-2.95743	4.34377	6.32024	-3.16838	4.84610
116	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
117	7.12389	-0.00002	4.22381	6.97902	0.00007	4.69680	6.82144	0.00006	5.21121
118	7.12389	0.00000	4.22382	6.97901	0.00000	4.69679	6.82143	0.00000	5.21120
119	6.77390	-2.39464	3.85384	6.64346	-2.26763	4.35990	6.44831	-2.50435	4.84743
120									

FIG. 15C3B



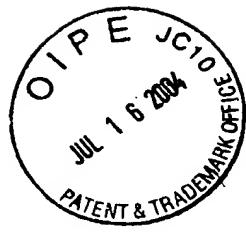
	A	B	C	D	E	F	G	H	I	J
75		1			2				3	
76	Facet				Facet					
77 G1	8			10				12		
78	Point 1	4.09124	-2.79379	3.18258	3.69818	-2.92223	3.24153	3.24420	-3.02504	3.23954
79	Point 2	4.01214	-2.84817	3.23834	3.63983	-2.96298	3.28365	3.16721	-3.07489	3.28909
80	Point 3	3.98793	-2.83938	3.21628	3.63983	-2.96298	3.28365	3.16395	-3.07385	3.28633
81	Point 4	3.75453	-3.01427	3.40306	3.51489	-3.05022	3.37382	2.92561	-3.29999	3.44252
82	Point 5	5.22942	-4.63324	6.41511	5.13129	-4.70247	6.48702	4.61719	-4.94977	6.68618
83	Point 6	5.73352	-4.52709	6.42964	5.43660	-4.63666	6.49349	5.13524	-4.83496	6.69231
84	Point 7	5.72839	-4.50585	6.39515	5.43660	-4.63666	6.49349	5.13464	-4.83220	6.68785
85	Point 8	5.89808	-4.46565	6.39317	5.58735	-4.60417	6.49668	5.31142	-4.79243	6.68904
86	Point 9	4.09124	-2.79379	3.18258	3.69818	-2.92223	3.24153	3.24420	-3.02504	3.23954
87	Start of scan line	4.26503	-2.91167	3.42532	3.84166	-3.00957	3.42658	3.41287	-3.12422	3.45169
88	Middle of rotation	4.65630	-3.25182	4.08689	4.20000	-3.30000	4.00000	3.71220	-3.35150	3.90711
89	End of scan line	5.66800	-4.26040	5.99609	5.37598	-4.41413	6.12962	5.05851	-4.57920	6.27163
90										

FIG. 15D1



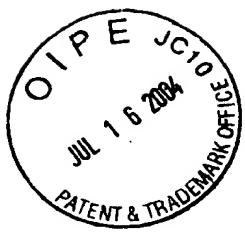
	A	B	C	D	E	F	G	H	I	J
91		Facet			Facet			Facet		
92	G2	7			9			11		
93	Point 1	5.89808	4.46565	6.39317	5.58735	4.60417	6.49668	5.31142	4.79243	6.68904
94	Point 2	5.72839	4.50585	6.39515	5.43660	4.63666	6.49349	5.13464	4.83220	6.68785
95	Point 3	5.73352	4.52709	6.42964	5.43660	4.63666	6.49349	5.13524	4.83496	6.69231
96	Point 4	5.22942	4.63324	6.41511	5.13129	4.70247	6.48702	4.61719	4.94977	6.68618
97	Point 5	3.75453	3.01427	3.40306	3.51489	3.05022	3.37382	2.92561	3.22999	3.44252
98	Point 6	3.98793	2.83938	3.21628	3.63983	2.96298	3.28365	3.16395	3.07385	3.28633
99	Point 7	4.01214	2.84817	3.23834	3.63983	2.96298	3.28365	3.16721	3.07489	3.28909
100	Point 8	4.09124	2.79379	3.18258	3.69818	2.92223	3.24153	3.24420	3.02504	3.23954
101	Point 9	5.89808	4.46565	6.39317	5.58735	4.60417	6.49668	5.31142	4.79243	6.68904
102	Start of scan line	5.66800	4.26040	5.99609	5.37598	4.41413	6.12962	5.05851	4.57920	6.27163
103	Middle of rotation	4.65630	3.25182	4.08689	4.20000	3.30000	4.00000	3.71220	3.35150	3.90711
104	End of scan line	4.26503	2.91167	3.42532	3.84166	3.00957	3.42658	3.41287	3.12422	3.45169
105										

FIG. 15D2



	A	B	C	D	E	F	G	H	I	J
106										
107 G3	Facet				Facet					
108	Point 1	7.38483	0.36621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
109	Point 2	7.33669	0.30677	3.72290	7.27018	0.29548	3.93289	7.20014	0.30320	4.16642
110	Point 3	7.35085	0.45214	3.76848	7.27046	0.29830	3.93374	7.20860	0.39685	4.19794
111	Point 4	7.19969	0.19089	4.09695	7.13404	0.12287	4.26827	7.04932	0.16475	4.57132
112	Point 5	6.76168	-2.71194	3.69330	6.69289	-2.84072	3.83654	6.61109	-2.72069	4.17939
113	Point 6	6.82335	-2.91744	3.36219	6.76969	-2.95787	3.51184	6.69286	-2.89597	3.80174
114	Point 7	6.86196	-2.76529	3.33225	6.77043	-2.95493	3.51128	6.71818	-2.79811	3.78090
115	Point 8	6.89054	-2.80469	3.21407	6.79682	-2.99436	3.40022	6.75093	-2.83803	3.64875
116	Point 9	7.38483	0.36621	3.60327	7.31635	0.35437	3.81936	7.25212	0.36293	4.03445
117	Start of scan line	7.32381	0.00361	3.57345	7.25890	0.00056	3.78342	7.19246	0.00004	4.00001
118	Middle of rotation	7.32325	0.00000	3.57301	7.25882	0.00000	3.78335	7.19245	0.00000	4.00000
119	End of scan line	7.01771	-2.11473	3.23472	6.92439	-2.31840	3.41071	6.87855	-2.14504	3.66987

FIG. 15D3A



	K	L	M	N	O	P	Q	R	S
106	Facet			Facet			Facet		
107	4			5			6		
108	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
109	7.13030	0.29192	4.38726	6.97894	0.30016	4.88659	6.81701	0.28708	5.40695
110	7.13030	0.29192	4.38726	6.97921	0.30354	4.88784	6.81701	0.28708	5.40695
111	7.02005	0.15884	4.66313	6.81288	0.12498	5.31804	6.72143	0.18544	5.65479
112	6.55131	-2.93734	4.23771	6.36745	-2.80040	4.92441	6.222148	-3.06048	5.23666
113	6.61699	-3.02659	3.96692	6.47664	-2.92071	4.49196	6.28421	-3.12902	4.98858
114	6.61699	-3.02659	3.96692	6.47758	-2.91719	4.49112	6.28421	-3.12902	4.98858
115	6.64613	-3.06618	3.84679	6.51493	-2.95743	4.34377	6.32024	-3.16838	4.84610
116	7.17887	0.35054	4.26573	7.03508	0.35981	4.74102	6.87159	0.34512	5.26544
117	7.12389	-0.00002	4.22381	6.97902	0.00007	4.69680	6.82144	0.00006	5.21121
118	7.12389	0.00000	4.22382	6.97901	0.00000	4.69679	6.82143	0.00000	5.21120
119	6.77390	-2.39464	3.85384	6.64346	-2.26763	4.35990	6.44831	-2.50435	4.84743

FIG. 15D3B

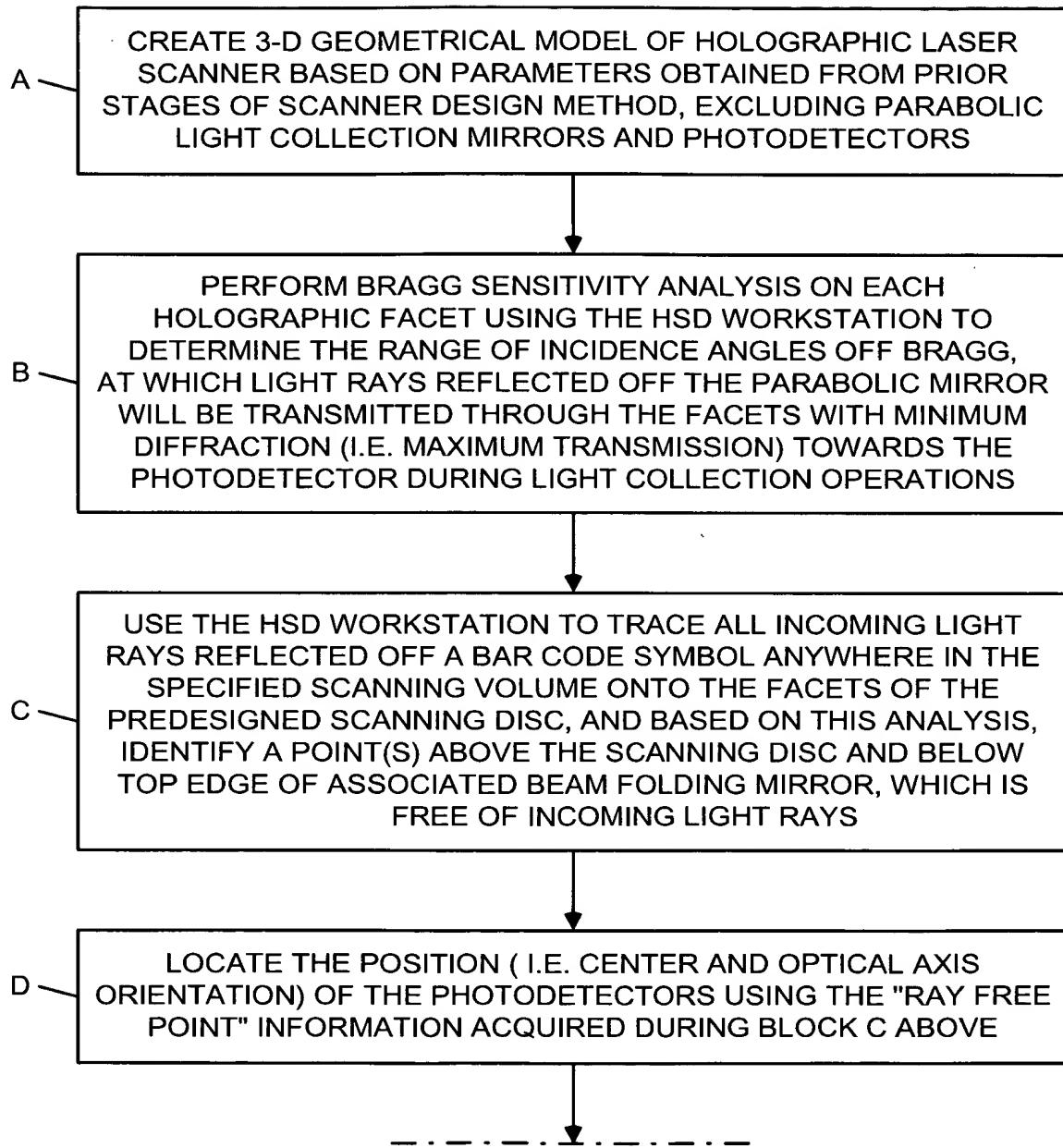


FIG. 16A

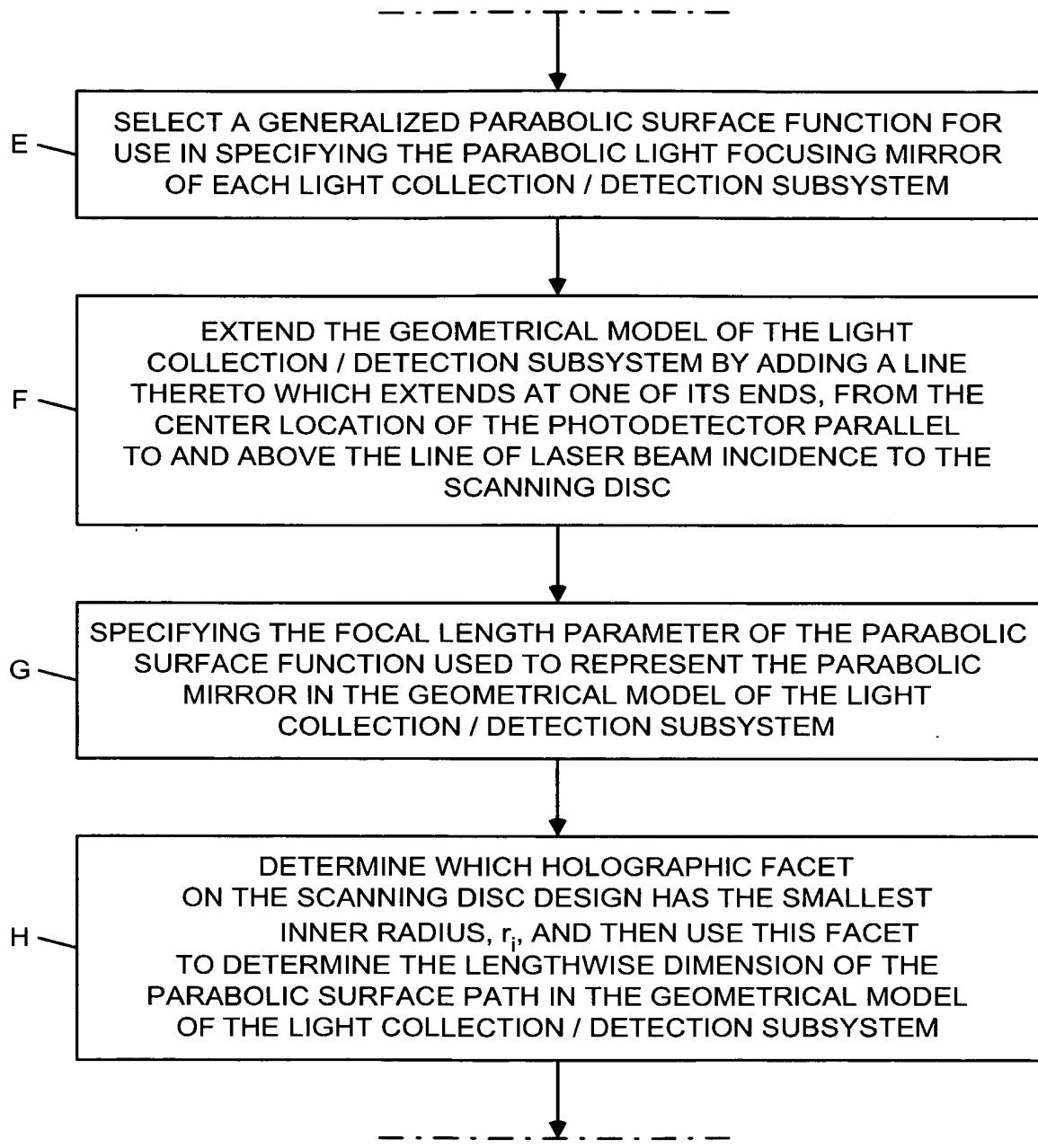


FIG. 16B

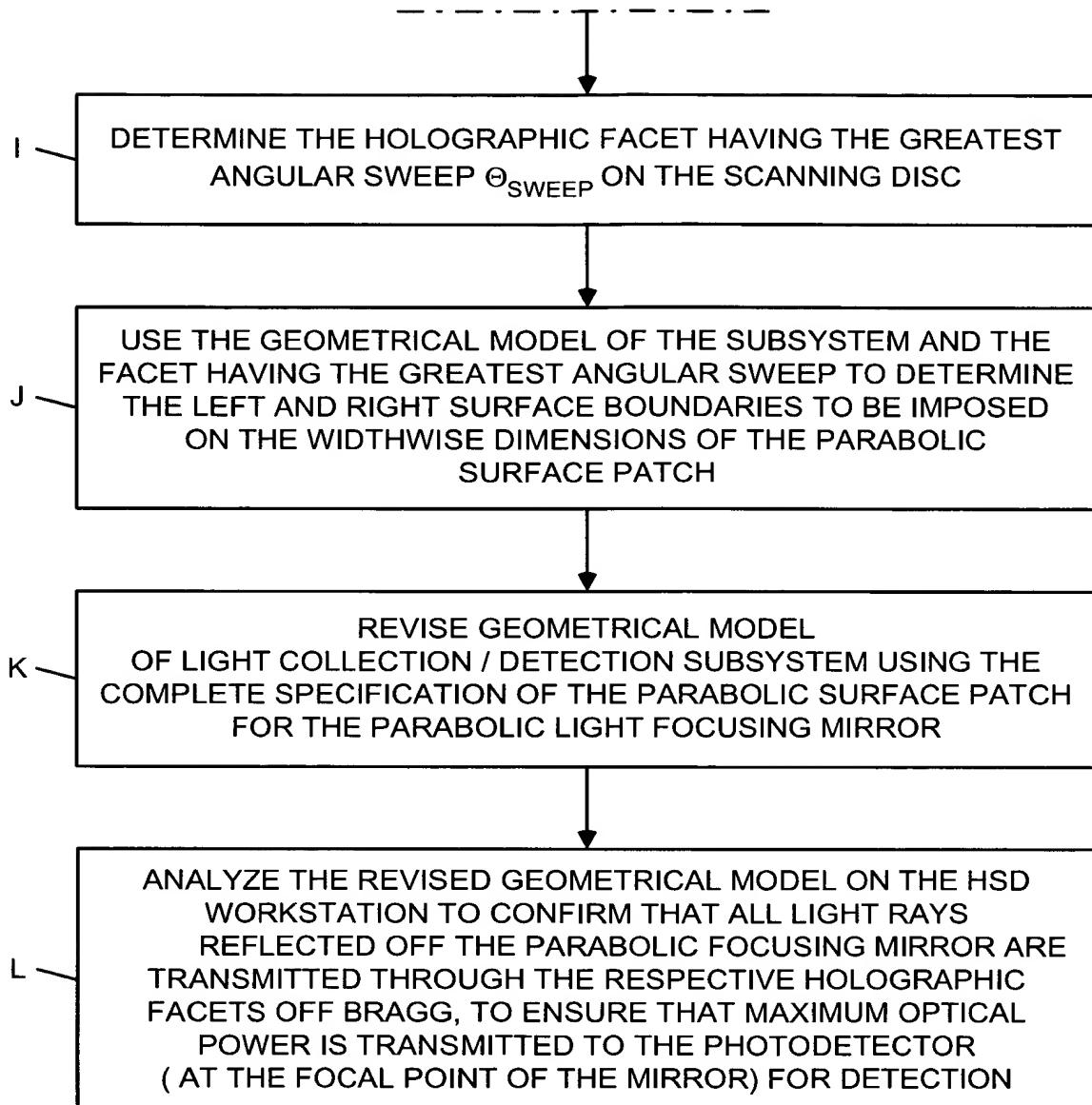
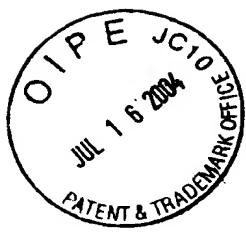


FIG. 16C

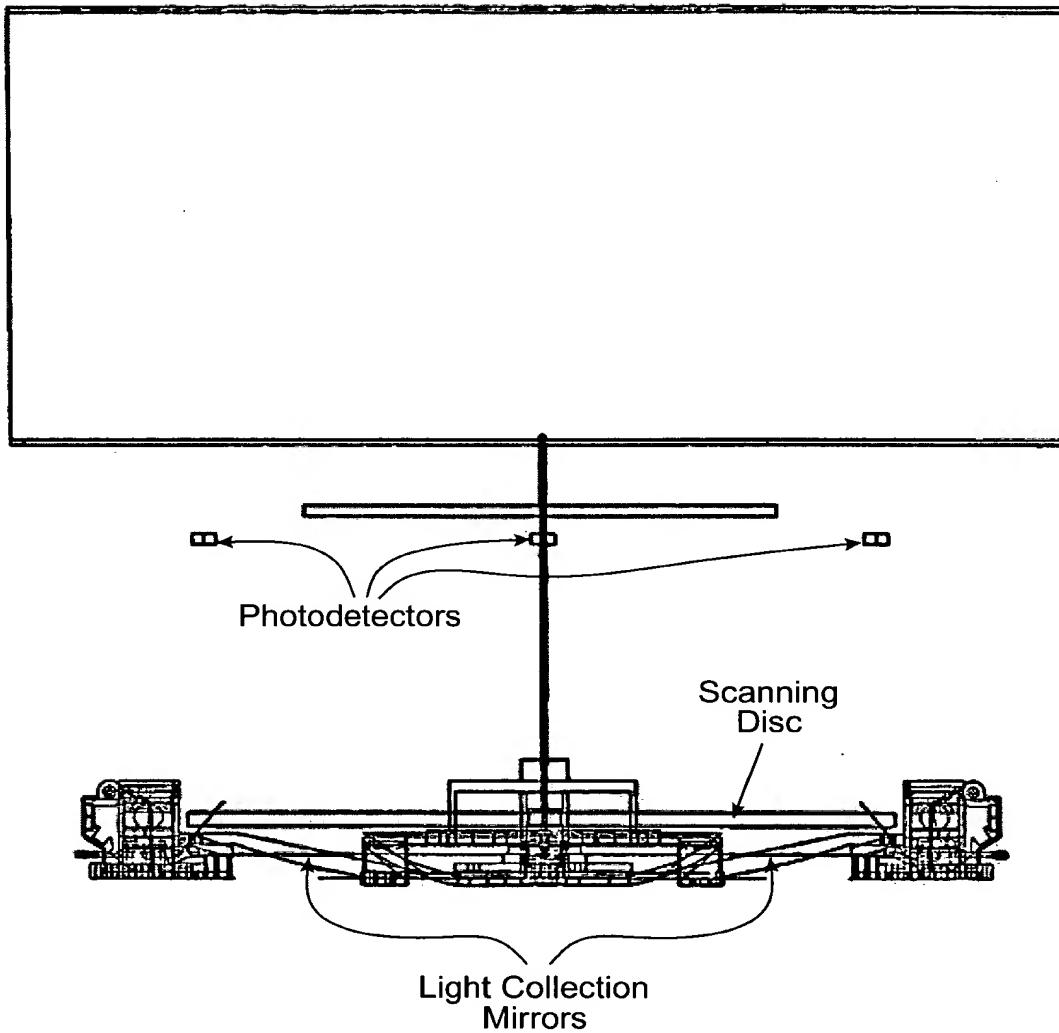
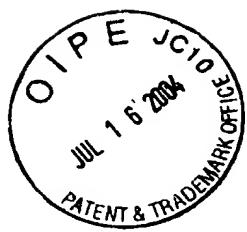


FIG. 17A

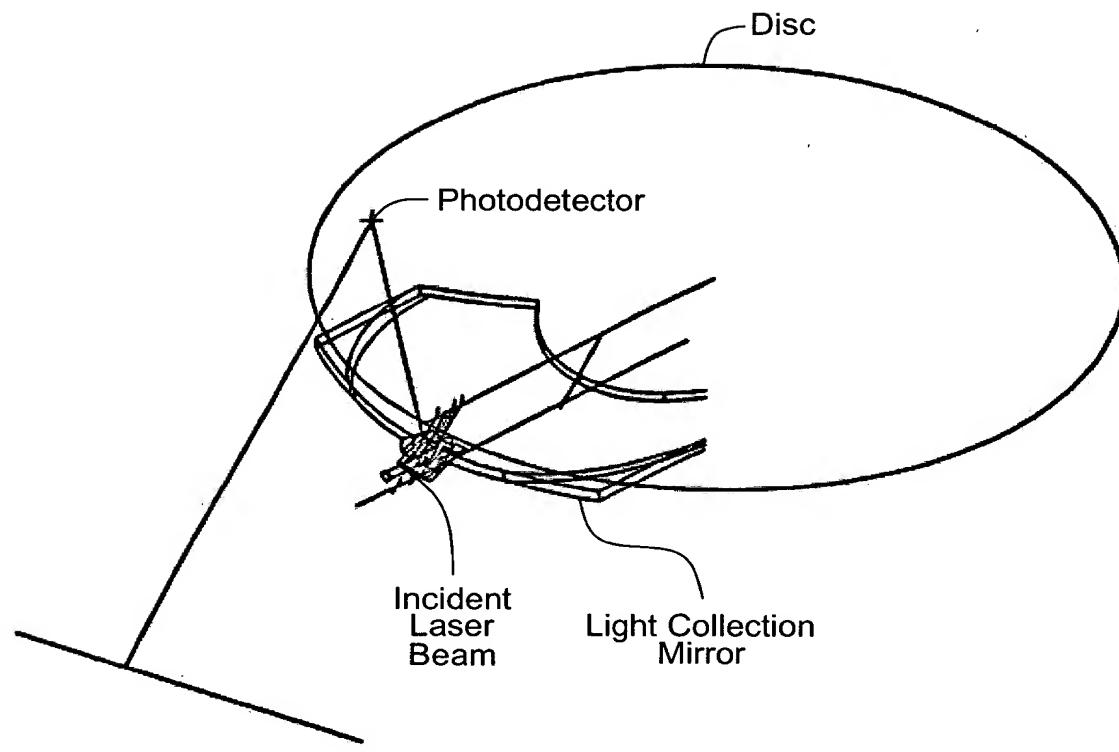


FIG. 17B

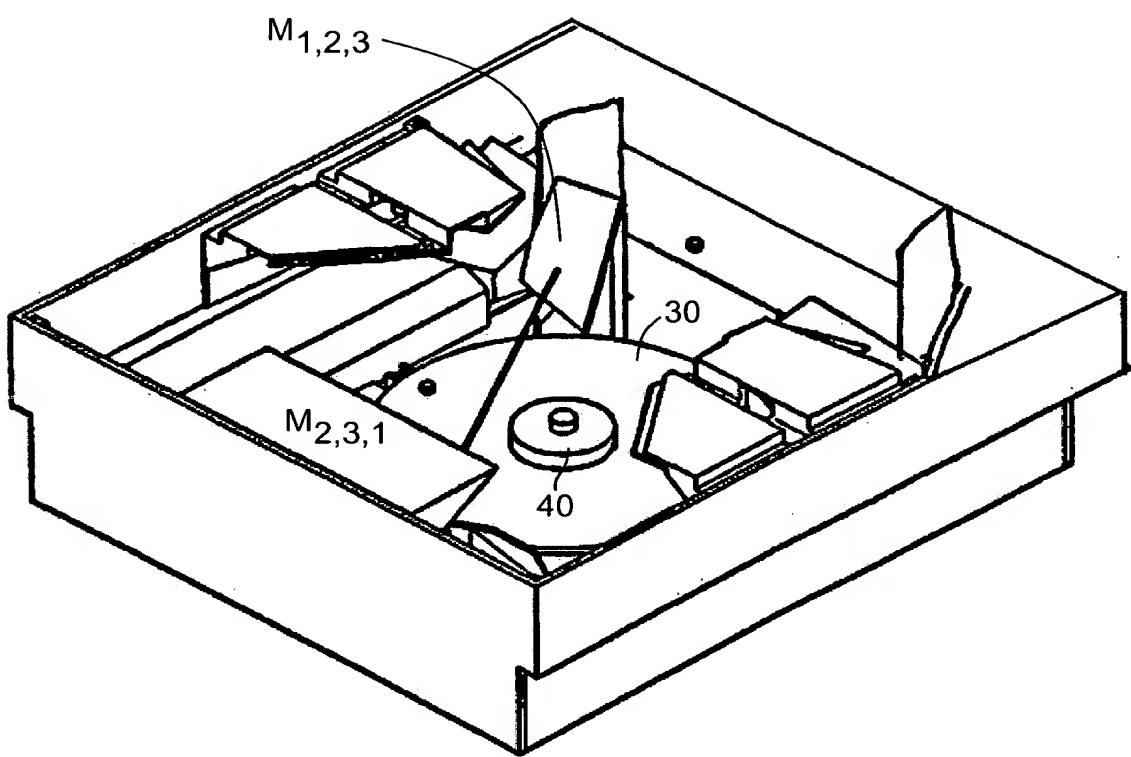


FIG. 18